5-4930-207-34

TM 5-4930-207-34

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL

LUBRICATING AND SERVICING UNIT, POWER OPERATED: TRAILER MOUNTED 23 CFM COMPRESSOR RECIPROCATING, GASOLINE DRIVEN (HENRY SPEN MODEL 901765-1) FSN 4930-017-9167

HEADQUARTERS, DEPARTMENT OF THE ARMY
APRIL 1970

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WARNING

AIR UNDER PRESSURE 175 PSI
AIR PRESSURE
is used in the operation of this equipment.

DEATH
or severe injury may result if personnel fail to observe safety precautions.

TECHNICAL MANUAL
No. 5-4930-207-34

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *22 April 1970*

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL

LUBRICATING AND SERVICING UNIT, POWER OPERATED: TRAILER MOUNTED 23 CFM COMPRESSOR RECIPROCATING, GASOLINE DRIVEN (HENRY SPEN MODEL 901765-1) FSN 4930-017-9167

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* This manual supersedes TM 5-4930-207-35, 18 May 1966.

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CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope

a. This manual is published for the use of direct support and general support maintenance personnel maintaining the Henry Spen Model 901765-1 Lubricating and Servicing Unit. It provides maintenance information beyond the scope of the tools, equipment, personnel, or supplies normally available to using organizations.

1-2. Forms and Records

a. Maintenance forms, records, and reports which are to be used by maintenance personnel at all levels are listed in and prescribed by TM 38-750.

b. Report of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications), and forwarded direct to the Commanding General, U.S. Army Mobility Equipment Command, ATTN: AMSME-MPP, 4300 Goodfellow Boulevard, St. Louis, Mo. 63120.

Section II. DESCRIPTION AND DATA

1-3. Description

TM 5-4930-207-12 provides a general description of the unit; a more detailed description of specific components and assemblies is contained in the applicable sections of the manual.

1-4. Differences Between Models

This manual covers only the Henry Spen & Co. Model 901765-1 Lubricating and Servicing Unit. No known unit differences exist for the model covered by the manual.

1-5. Tabulated Data

a. General. This paragraph contains all overhaul data pertinent to direct support and general support maintenance personnel.

b. Tabulated Data.

(1) Refer to TM 5-4930-207-12 for complete tabulated data of the lubricating unit.

(2) *Engine data.* Refer to TM 5-2805-203-14 for tabulated data related to the gasoline engine, model 4A032-11.

(3) *Compressor nut and torque data.*

Cylinder Head	55 ft-lbs.
Cylinder:	
Nuts	12 ft-lbs.
Studs	55 ft-lbs.
Connecting Rod	25 ft-lbs.
Valves	20 ft-lbs.

(4) *Wiring diagram.* Refer to TM 5-4930-207-12 for wiring diagram.

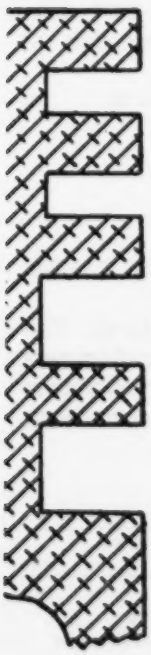
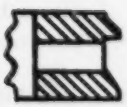
(5) *Repair and replacement standards.* Figure 1-1 and table 1-1 lists the manufacturers sizes, tolerances, desired clearances, and maximum allowable wear and clearances for the compressor assembly.

Table 1-1. Compressor Clearance and Fitting Requirements

	Low pressure piston 4-1/8	High pressure piston (2-1/8)
Rod bearing to crank	.001—.002	.001—.002
Piston pin to piston	Light tap fit .0001—.0005 press	Light tap fit .0001—.0005 press
Piston pin to rod bearing	.005—.0010	.005—.0010
Piston side clearance	.006 feeler gauge	.002 feeler gauge
Piston ring end gap	.013—.025	.007—.017
Piston ring side clearance	.002—.004	.002—.004
Crankshaft end play	.007—.020	.007—.020

PISTON CROSS SECTION	GROOVE WIDTH	DIAMETER BOTTOM OF RING GROOVE	RING CROSS SECTION	RING WIDTH	RING THICKNESS	LOAD AT DIAMETER	DIAMETER CLEARANCE
	.0955 .0965	1.886 1.896		.0925 .0935	.090 .100	9.5 lb min	.007 .017
	.0955 .0965	1.886 1.896		.0925 .0935	.090 .100	9.5 lb min	.007 .017
	.1885 .1895	1.846 1.856	 Expander	.1860 .1870	.075 .085	Tangential Load Of Assembly 6 to 10 lb	.007 .017
	.1885 .1895	1.846 1.856		.1860 .1870	.090 .100	3.4 lb min	.007 .017

HIGH PRESSURE PISTON

	.097 .098	3.715 3.705		.0925 .0935	.166 .176	9.5 lb min	.013 .025
	.097 .098	3.715 3.705		.0925 .0935	.166 .176	9.5 lb min	.013 .025
	.1895 .1905	3.695 3.685		.1860 .1870	.166 .176	11 lb min	.013 .025
	.1895 .1905	3.695 3.685		.1860 .1870	.166 .176	11 lb min	.013 .025

LOW PRESSURE PISTON

ME 4930-207-34/1-1

Figure 1-1. Compressor piston and ring assembly and repair standards.

CHAPTER 2

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE INSTRUCTION

Section I. REPAIR PARTS, SPECIAL TOOLS AND EQUIPMENT

2-1. Tools and Equipment

No tools and equipment are issued with or authorized for the lubricating and servicing unit.

2-2. Special Tools and Equipment

No special tools and equipment are required for direct support and general support personnel performing maintenance on the lubricating and servicing unit.

2-3. Maintenance Repair Parts

Direct support and general support maintenance repair parts are listed and illustrated in TM 5-4930-207-35P.

Section II. TROUBLESHOOTING

2-4. General

This section provides information useful in diagnosing and correcting unsatisfactory operation or failure of the lubricating and servicing unit or any of its components. Malfunctions which may occur are listed in table 2-1. Each malfunction stated is followed by a list of probable causes of the trouble. The corrective action recommended is described opposite the probable cause. Refer to TM 5-2805-203-14 for troubleshooting the engine assembly.

Table 2-1. Troubleshooting

Malfunction	Probable cause	Corrective action
1. Compressor high or low pressure system overheats.	a. Scored piston or cylinder wall.	a. Replace piston or hone cylinder wall (para 4-5 thru 4-8).
	b. Broken discharge valves or springs.	b. Replace valves (para 4-2).
2. Compressor knocks or develops excessive noise	a. Piston pins worn.	a. Replace piston pins and pistons (para 4-5 thru 4-8).
	b. Connecting rods loose.	b. Replace defective bearings (para 4-6 thru 4-8).
3. Excessive compressor oil consumption.	a. Incorrect oil.	a. Change oil and add correct oil (Refer to LO 5-4930-207-12).
	b. Clogged air cleaner.	b. Replace air cleaner (TM 5-4930-207-12).
	c. Worn piston rings.	c. Replace piston rings. Be sure rings are installed correctly (para 4-6 thru 4-8).
4. Transfer pump does not operate.	a. Defective air valve and piston.	a. Repair or replace air valve or piston (para 5-19 thru 5-21).
	b. Defective foot valve.	b. Repair or replace foot valves (para 5-19 thru 5-21).
5. Lubricant supply pump does not operate.	a. Defective control or metering valves.	a. Replace valves (para 5-7 thru 5-9).
	b. Defective pumps.	b. Repair or replace pumps (para 5-15 thru 5-17).
6. Brakes fail.	a. Brake linings worn or excessively dirty or greasy.	a. Replace linings (para 6-4).
	b. Master cylinder defective	b. Replace or repair master cylinder (para 6-3).
7. Brakes noisy	Brake linings worn, dirty or greasy	Replace linings (para 6-4).
8. Brakes grab	Brake linings oily or greasy	Replace linings (para 6-4).

Section III. REMOVAL AND INSTALLATION OF MAJOR COMPONENTS AND AUXILIARIES

2-5. General

This section contains the removal and installation instructions for the lubricating unit. For removal and installation instructions on the engine assembly, compressor assembly, three lubricating pumps, reel bank assembly, alcohol injecter assembly, and control panel assembly refer to TM 5-4930-207-12.

2-6. Lubricating Unit

a. Removal. The entire lubricating unit can be removed from the trailer assembly by removing six screws, nuts, and washers which attach it to the trailer bed. Carefully lift the unit with an overhead crane or fork lift truck that has a minimum of 6,000 lbs. capacity.

b. Installation. Installation is the reverse of removal.

CHAPTER 3

REPAIR OF ENGINE ACCESSORIES (ELECTRICAL EQUIPMENT)

Section I. GENERAL ASSEMBLY

3-1. General

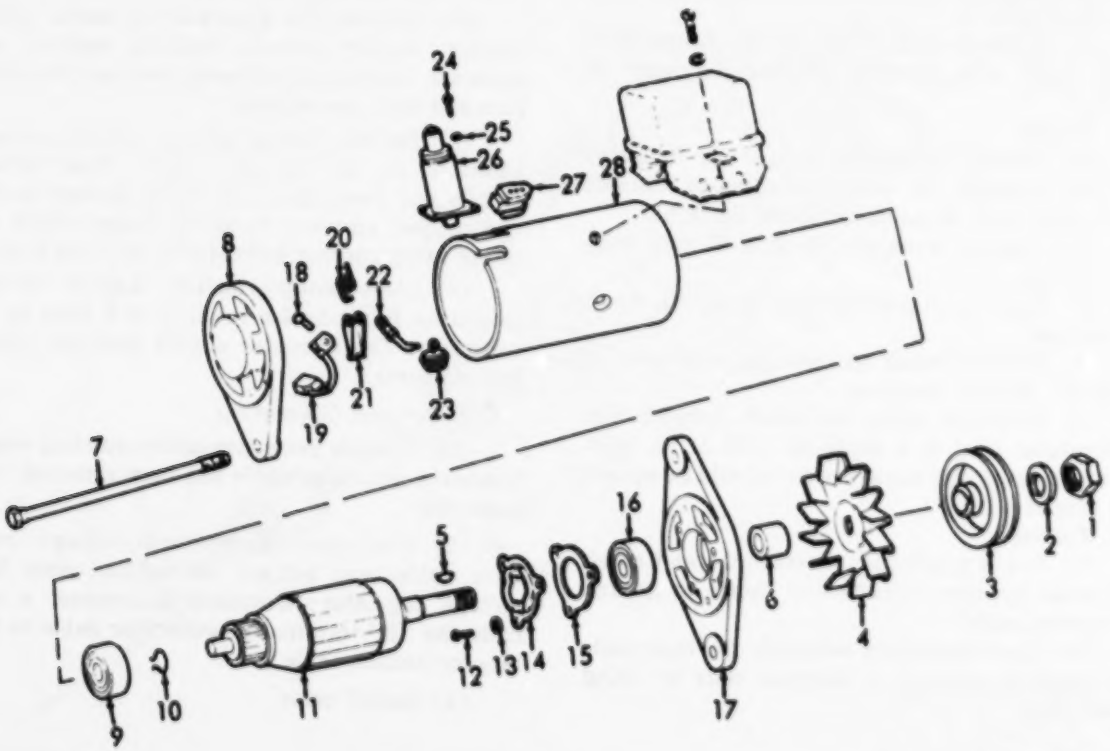
The generator assembly has an armature mounted at both ends on bearings. The armature rotates between pole shoes over which are wound field coils. The voltage and current developed in the armature windings is supplied through brushes riding on a commutator to the generator terminals and then to the batteries and other electrical accessories in the circuit.

3-2. Generator

a. Removal and Disassembly.

(1) Remove generator assembly and voltage regulator as described in TM 5-4930-207-12.

(2) Disassemble the generator assembly in numerical sequence as shown in figure 3-1.



ME 4930-207-34/3-1

1. Nut	8. Head assembly	15. Retainer	22. Lead
2. Washer	9. Ball bearing	16. Bearing	23. Rectifier
3. Pulley	10. Clip	17. Head Assembly	24. Screw (4)
4. Fan	11. Armature	18. Screw	25. Washer (4)
5. Key	12. Screw	19. Brush	26. Capacitor
6. Spacer	13. Washer	20. Spring (2)	27. Grommet
7. Bolt	14. Plate	21. Brush set (2)	28. Frame-field

Figure 3-1. Generator assembly, disassembly and reassembly.

b. Cleaning.

(1) Use a cloth dampened with P-D-680 to wipe all dust, oil, and foreign material from the brush plates, end frames, armature, and field assemblies.

(2) Use filtered compressed air to blow dust and dirt from crevices of the armature and field windings.

(3) Secure armature in a lathe. With armature spinning, hold an emery cloth against the commutator until the copper is bright and smooth.

c. Inspection.

(1) Examine field coils for worn or burned insulation. Be certain connections between field coils are secure. Repair connections if necessary.

(2) Examine field frame assembly for cracks or distortions. Check thread conditions in tapped holes.

(3) Check drive end head for cracks or warping. Inspect shaft end of armature for damage and wear.

(4) Examine pulley for broken flanges and worn shaft hole. Inspect brushes for wear or damage.

d. Repair.

(1) Check commutator with a dial indicator for out-of-round. If total out-of-round exceeds 0.001 inch, turn down commutator on lathe.

(2) Replace armature or coils if tests indicate shorts.

(3) Replace all parts indicating cracks, wear, or damage.

(4) Replace brush springs that are worn or fatigued. Replace brushes.

(5) Undercut mica insulation between the commutator bars to a depth of 1/32 of an inch. When undercutting mica, the cut should be square and free of burrs.

e. Testing.

(1) Use a conventional test light and check field coils for open circuits and shorts to ground or between coils.

(2) Check armature assembly for open coils and shorts to ground, or between coils by using a test light.

(3) Check brush holders for shorts to ground with a test light.

f. Armature End Play Test.

(1) Align end of armature shaft with plunger of dial indicator. Pull shaft to outer limit and set dial indicator.

(2) Push shaft in toward commutator end of generator to its inner limit. Dial indicator should read between 0.003 and 0.010 inch.

(3) If dial indicator reading is not within these limits, improper assembly or worn parts are possible causes. Check bearings to be sure of proper seating.

g. Reassembly and Installation.

(1) Reassembly is the reverse of disassembly. Refer to figure 3-1.

(2) Install the generator assembly and voltage regulator as instructed in TM 5-4930-207-12.

h. Field Current Draw Test.

(1) Connect the generator in series with a battery, battery switch, variable resistor, and ammeter. Connect a voltmeter between the armature and field connections.

(2) Before closing battery switch, connect ammeter to its highest range. Close battery switch and read ammeter. Open battery switch and connect ammeter to lowest range which will safely carry current indicated in first reading.

(3) Close battery switch. Adjust variable resistance to produce a reading of 5 volts on the voltmeter. The ammeter should indicate 1.00 to 1.05 amperes.

i. Polarizing Generator.

(1) Polarize generator before starting engine whenever generator cable has been removed from generator.

(2) Disconnect generator-to-voltage regulator cable, and battery connection cable from voltage regulator; momentarily connect a wire from the "B" terminal of generator cable to battery connection cable.

(3) Install cable.

Section II. STARTER ASSEMBLY

3-3. General

The shift lever cranking motor has the shift lever mechanism and the solenoid plunger enclosed in the drive housing protecting them from exposure to dirt and icing conditions. A solenoid switch mounted to the flange on the starting motor drive housing operates the overrunning clutch drive by means of a linkage and shift lever. When the control switch closes the cranking circuit the solenoid is energized, shifting the starting motor pinion into mesh with the engine flywheel ring gear and

closing the main contacts located inside the solenoid. Battery current is then directed to the motor causing the armature to rotate. Cranking torque is transmitted by the clutch from the starting motor armature to the engine flywheel ring gear.

3-4. Starter

a. Removal and Disassembly.

(1) Remove starter assembly as instructed in TM 5-4930-207-12. Match mark the frame (15, fig. 3-2), starter motor housing (30), shift lever housing (14), and drive housing (7) to assure proper reassembly.

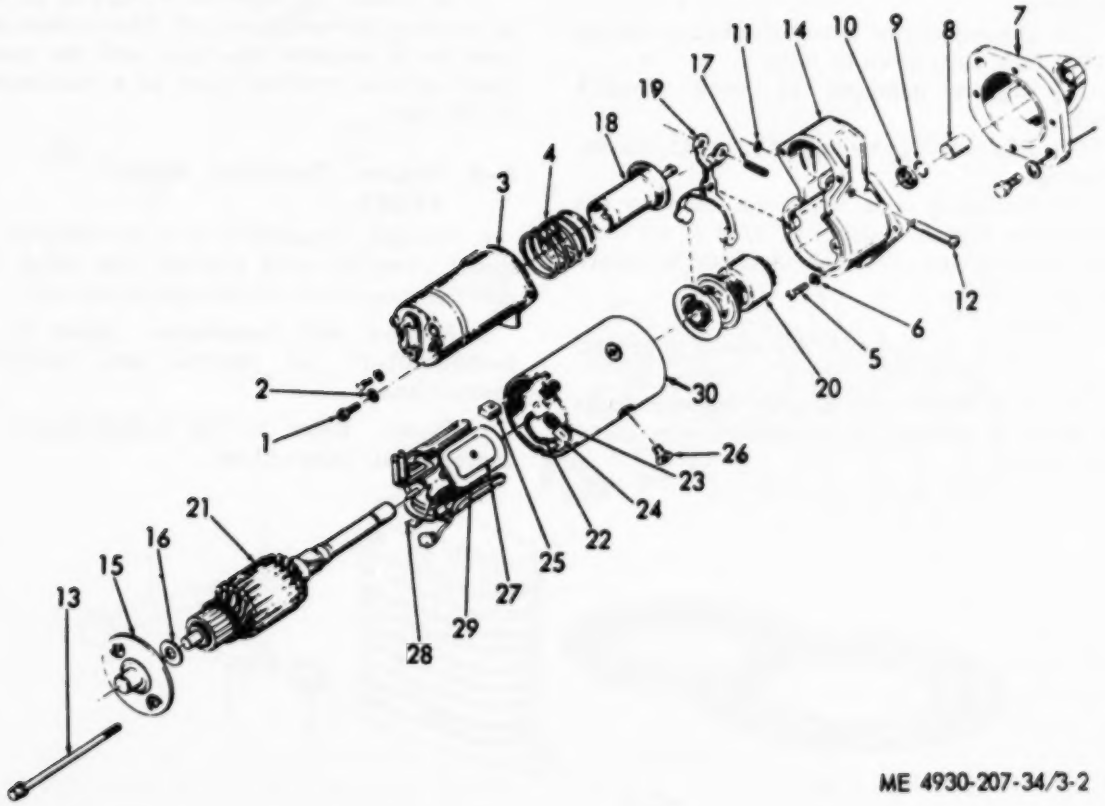
(2) Disassemble the starter assembly in numerical sequence as shown, in figure 3-2.

(3) Do not remove pole shoes (27), field coils (29), or coil assembly unless replacement parts are needed.

b. Cleaning.

(1) Use a cloth dampened with P-D-680 to wipe all dust, oil, and other foreign material from the brush plates, end frames, armature and field assemblies.

(2) Use filtered compressed air to blow dust and dirt from the crevices of the armature and field windings.



1. Screw (2)
2. Washer (2)
3. Solenoid switch
4. Spring
5. Screw (4)
6. Washer (4)
7. Drive housing
8. Bushing
9. Ring
10. Pinion stop
11. Snapring
12. Stud
13. Bolt (2)
14. Shift lever housing
15. Frame
16. Washer
17. Pin
18. Plunger assembly
19. Lever assembly
20. Clutch
21. Armature
22. Starter brush pkg (2)
23. Spring
24. Brush holder
25. Grommet
26. Screw (4)
27. Pole shoe (4)
28. Coil assy
29. Field coil
30. Housing

Figure 3-2. Starter assembly, disassembly and reassembly.

(3) Secure armature in a lathe. With armature spinning, hold an emery cloth against the commutator until the copper is bright and smooth.

c. Inspection.

(1) Examine field frame assembly for cracks or warping. Inspect armature shaft end for damage or wear.

(2) Examine clutch for broken or cracked teeth.

(3) Examine field coils for worn, burned, and frayed insulation. Be certain connections between field coils are secure. Repair connections if necessary.

(4) Inspect springs for distortion or fatigue. Examine brushes for damage or excessive wear.

d. Repair.

(1) Replace armature or coils if tests indicate shorts.

(2) If commutator is out-of-round in excess of 0.001 inch, turn down on lathe.

(3) Replace damaged or worn solenoid switch.

(4) Replace all parts indicating wear, cracks, or damage.

(5) Undercut mica insulation between the commutator bars to a depth of 1/32 of an inch. When undercutting mica, the cut should be square and free of burrs.

e. Testing.

(1) Check brush holder for shorts to ground using a test light.

(2) Test armature assembly for open coils and shorts to ground, or between coils by using a test light.

(3) Check field coils for open circuits and shorts to ground, or between coils using a test light.

f. Reassembly and installation.

(1) Reassembly is the reverse of disassembly. Refer to figure 3-2.

(2) Install the starter assembly as instructed in TM 5-4930-207-12.

g. No-Load Test.

(1) Connect the starting motor in series with a fully charged battery, an ammeter capable of reading several hundred amperes, and a variable resistor. Also connect a voltmeter from the motor frames. An rpm indicator is necessary to measure armature speed.

(2) Obtain the specified voltage of 23 volts by varying the resistance unit. The current draw must be 90 amperes maximum and the current speed at these readings must be a maximum of 10,700 rpm.

3-5. Engine, Gasoline, Model 4A032-11

a. General. The engine is a four-cylinder, air cooled, overhead valve, gasoline type which operates the compressor on the lubricating unit.

b. Removal and Installation. Refer to TM 5-4930-207-12 for removal and installation instructions.

c. Repair. Refer to TM 5-2805-203-14 for engine repair instructions.

CHAPTER 4

REPAIR OF AIR COMPRESSOR

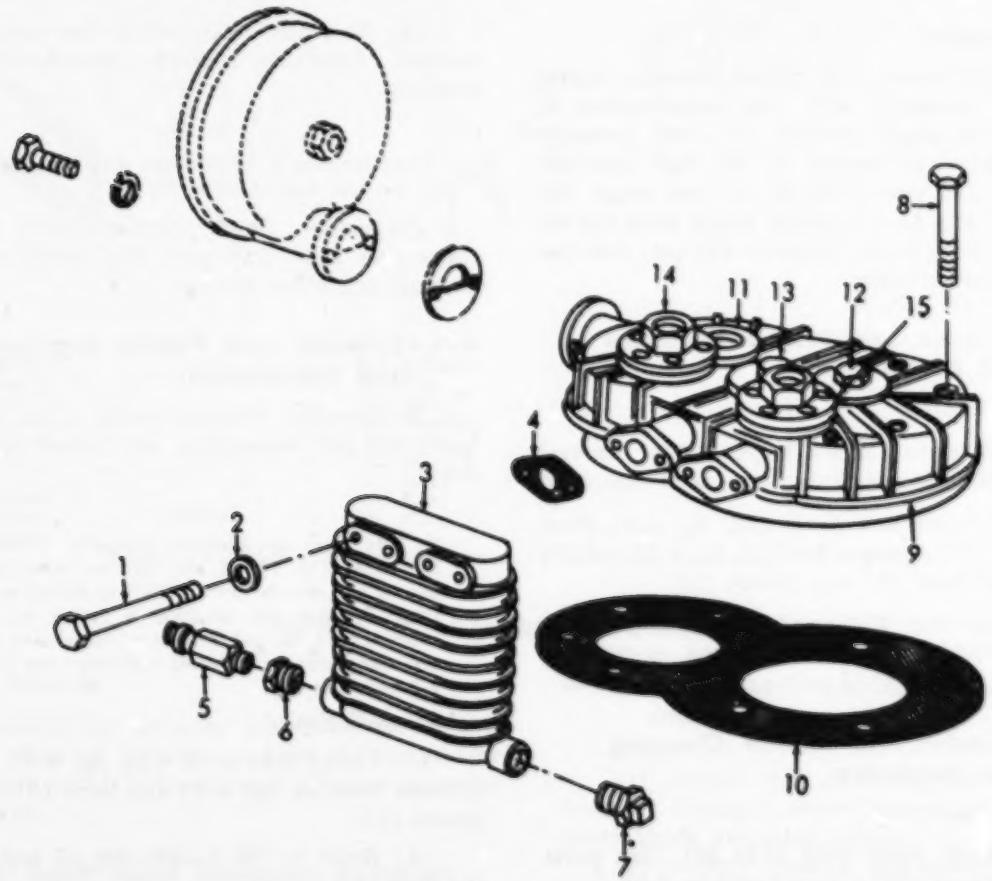
Section I. CYLINDER HEAD, VALVES, AND INTERCOOLER

4-1. General

The cylinder head has a disk type valve system. The intercooler cools the air coming from the low pressure cylinder before it enters the high pressure cylinder.

4-2. Cylinder Head, Valves, and Intercooler Removal and Disassembly

a. Removal. Refer to TM 5-4930-207-12 to remove the lines and fittings and air cleaner.



ME 4930-207-34/4-1

1. Bolt (4)
2. Washer (4)
3. Intercooler
4. Gasket
5. Valve
6. Bushing
7. Plug
8. Screw (8)
9. Head
10. Gasket
11. Valve
12. Valve
13. Valve
14. Valve
15. Valve

Figure 4-1. Cylinder head, valves, and intercooler, disassembly and reassembly.

Remove eight screws (8) and lift off cylinder head (9) and intercooler (3).

b. Disassembly. Disassemble the cylinder head, valves, and intercooler as illustrated in figure 4–1.

4–3. Cylinder Head Valves and Intercooler Inspection and Repair

a. Inspection. Inspect valves, valve seats, valves springs and stops for nicks, scoring, burning, warping, and noticable wear. Discard worn or damaged parts. Check cylinder head and intercooler for cracked or chipped castings, and damaged screw threads.

b. Repair. Repair by replacing damaged parts.

4–4. Cylinder Head, Valves and Intercooler Reassembly and Installation

a. Reassembly. The cylinder head, valves, and intercooler are reassembled in reverse of disassembly, refer to figure 4–1, replace gaskets.

b. Installation. Install cylinder head (9) and intercooler (3). Refer to TM 5–4930–207–12 and install the air cleaner, lines and fittings.

Section II. CYLINDER AND PISTONS

4–5. General

The twin-cylinder construction gives a higher discharge pressure with less consumption of power. The larger cylinder is a low pressure cylinder and the smaller is the high pressure cylinder. The low pressure, or first stage, exhausts air into an intercooler which cools the air before it enters under pressure (45 psi) into the high pressure cylinder.

4–6. Cylinder and Pistons Removal and Disassembly

a. Removal.

(1) Refer to TM 5–4930–207–12 for removal of lines and fittings and the compressor assembly.

(2) Remove side cover (13, fig. 4–4) from crankcase (17). Remove bolts (8, fig. 4–1) and lift off cylinder head (9) and gasket (10).

b. Disassembly. Refer to figure 4–2 and remove and disassemble the cylinder and pistons as illustrated in numerical sequence.

4–7. Cylinder and Pistons Cleaning and Inspection

a. Cleaning.

(1) Wash parts with P–D–680. Dry parts except bearings with a clean lint-free cloth.

(2) Bearings are dried by the vacuum air method. Lubricate bearings immediately after cleaning.

NOTE

Avoid touching clean bearings with bare fingers; do not spin bearing while dry.

b. Inspection. Check cylinders bores, pistons, connecting rods, and pins for excessive wear, scoring, and other damage.

4–8. Cylinder and Pistons Reassembly and Installation

a. Reassembly. Replace gasket (10), refer to figure 4–2 and reassemble and install in reverse order.

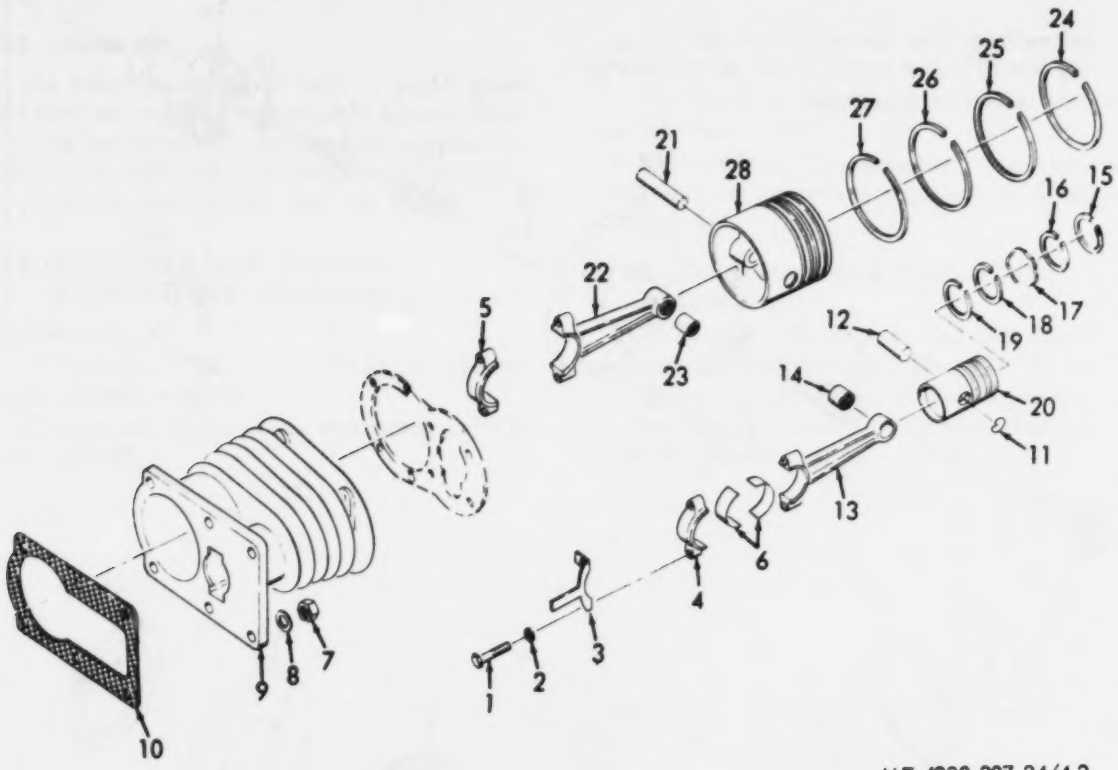
NOTE

Be sure rings are installed correctly. Compression rings (15, 16, 24, and 25) are taper faced and on one side the word "TOP" is etched on the ring. Be sure this marking is facing up. Oil rings (18, 19, 26, and 27) are of the slotted type and also must be installed correctly, see figure 1–2 and table 1–1.

b. Installation.

(1) Install side cover (13, fig. 4–4). Install cylinder head (9, fig. 4–1) and bolts (8), replace gasket (10).

(2) Refer to TM 5–4930–207–12 and install the lines and fittings.



ME 4930-207-34/4-2

1. Screw (2)
2. Washer (2)
3. Plate
4. Rod cap
5. Rod cap
6. Shell
7. Nut (6)
8. Washer (6)
9. Cylinder
10. Gasket
11. Retainer
12. Pin
13. Rod
14. Bearing
15. Ring
16. Ring
17. Ring
18. Ring
19. Ring
20. Piston
21. Pin
22. Rod
23. Bearing
24. Ring
25. Ring
26. Ring
27. Ring
28. Piston

Figure 4-2. Cylinder and pistons, removal, disassembly, reassembly, and installation.

Section III. CENTRIFUGAL UNLOADER

4-9. General

The centrifugal unloader automatically opens a valve releasing compression from the compressor cylinders and intercooler each time the compressor stops.

4-10. Centrifugal Unloader Removal and Disassembly

For removal and disassembly of the centrifugal unloader see figure 4-3, illustrated in numerical sequence breakdown.

4-11. Centrifugal Unloader Inspection and Repair

a. Inspection.

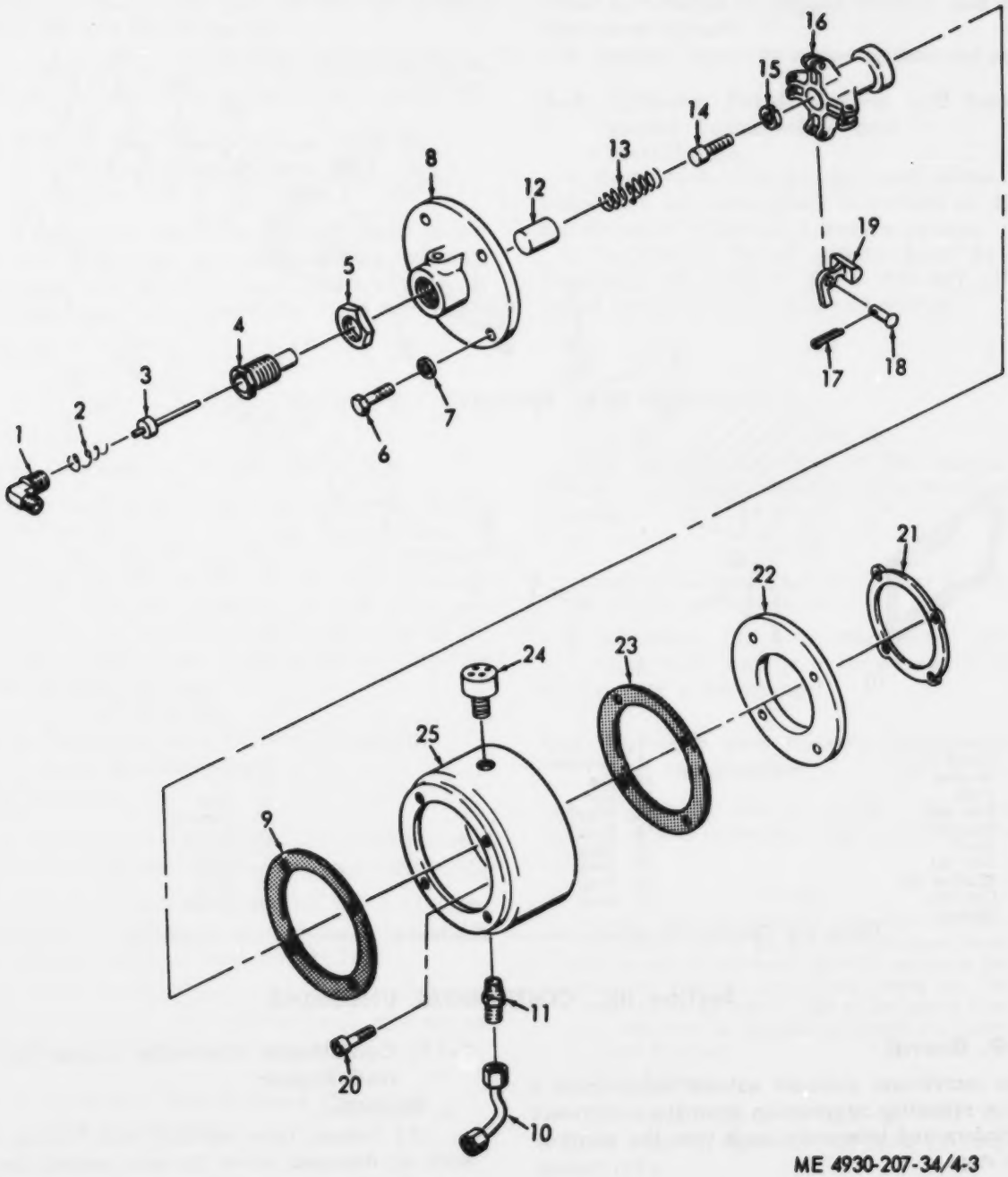
(1) Inspect tube assembly and fittings for worn or damaged screw threads, cracks, dents, sharp bends, and other defects.

(2) Inspect housing and cover for cracks and other damage.

b. Repair. Repair by replacing damaged parts.

4-12. Centrifugal Unloader Reassembly and Installation

Refer to figure 4-3 for reassembly and installation. Replace gaskets.



1. Elbow
2. Spring
3. Plunger
4. Body
5. Nut
6. Bolt (4)
7. Washer (4)
8. Cover
9. Gasket
10. Tube
11. Connector
12. Plunger
13. Spring
14. Screw
15. Washer
16. Body
17. Key (4)
18. Pin (4)
19. Weight
20. Screw
21. Shim
22. Spacer
23. Gasket
24. Breather
25. Housing

Figure 4-3. Centrifugal unloader, removal, disassembly, reassembly, and installation.

Section IV. CRANKCASE AND CRANKSHAFT

4-13. General

The crankcase is equipped with a sight glass which provides maximum protection against damage due to insufficient oil; however the splash-type lubrication system provides adequate lubrication, even if the oil level in the reservoir is low.

4-14. Crankcase and Crankshaft Removal and Disassembly

a. Removal.

(1) Refer to TM 5-4930-207-12 and remove the compressor assembly.

(2) Remove flywheel as instructed in TM 5-4930-207-12.

(3) Remove cylinder and pistons as instructed in section II. (para 4-6*a* (1) and (2).

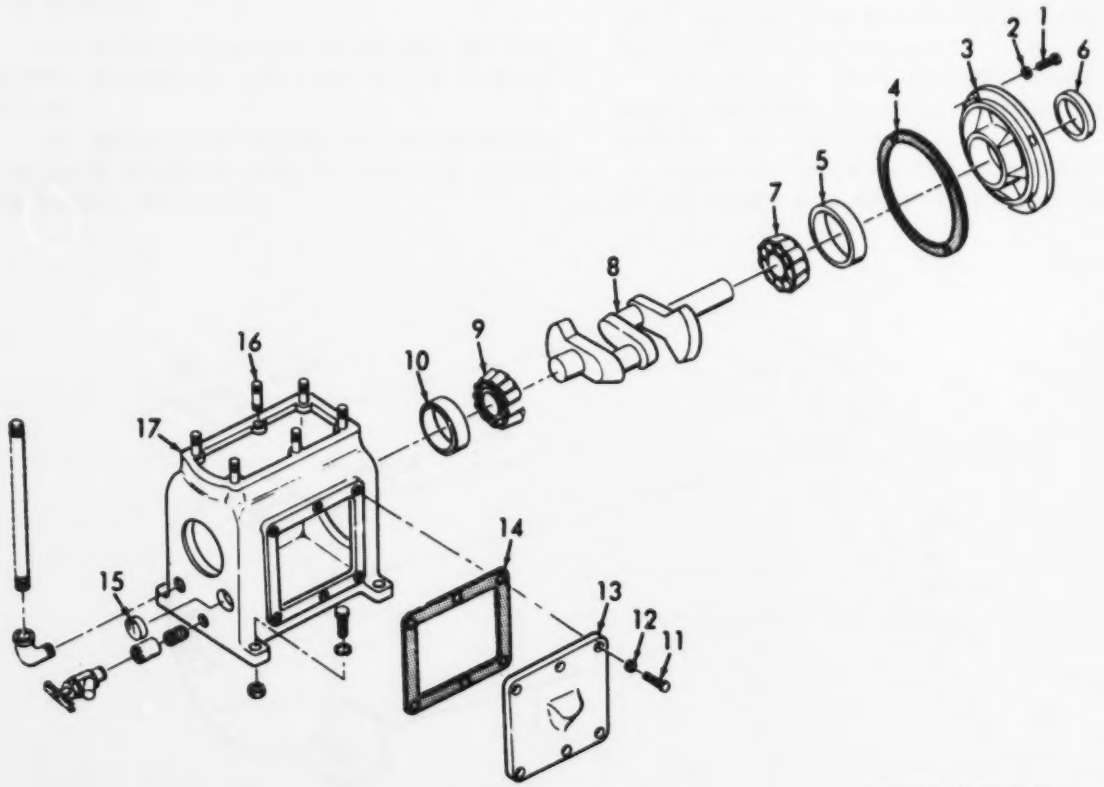
(4) Remove centrifugal unloader per section III. (para 4-10).

b. Disassembly. Disassemble crankcase and crankshaft in numerical sequence as illustrated in figure 4-4.

4-15. Crankcase and Crankshaft Cleaning

a. Crankcase. Swab out the lubricating oil passages in the crankcase with P-D-680 solvent.

b. Bearings. Clean with P-D-680 and dry with the vacuum air method. Lubricate bearings immediately after cleaning.



ME 4930-207-34/4-4

1. Bolt (4)
2. Washer (4)
3. Cover
4. Gasket
5. Cup
6. Seal
7. Cone and rollers
8. Crankshaft
9. Cone and rollers
10. Cup
11. Bolt (6)
12. Washer (6)
13. Cover
14. Gasket
15. Sight glass
16. Stud (6)
17. Crankcase

Figure 4-4. Crankcase and crankshaft, disassembly and reassembly.

NOTE

Avoid touching clean bearings with bare fingers; do not spin bearing while dry.

4-16. Crankcase and Crankshaft Inspection and Repair

a. Inspection.

(1) Inspect crankcase for cracked and chipped castings and damaged stud threads.

(2) Inspect cups, seal, and bearing for excessive wear and damage.

b. Repair. Repair by discarding all damaged and excessively worn or damaged parts.

4-17. Crankcase and Crankshaft Reassembly and Installation

a. Reassembly. Replace gaskets, refer to figure 4-4 and reassemble crankcase and crankshaft in reverse order.

b. Installation.

(1) Install centrifugal unloader as instructed in section III (para 4-12).

(2) Install cylinder and pistons as instructed in section II (para 4-8*b* (1) and (2).

(3) Install flywheel as instructed in TM 5-4930-207-12.

(4) Refer to TM 5-4930-207-12 and install the compressor assembly.

CHAPTER 5

REPAIR OF LUBRICATING EQUIPMENT

Section I. AIR RECEIVER

5-1. General

The air receiver is mounted on the skid weldment. It has a 450 psi maximum load. It provides compressed air which forces lubricant and oil from storage tanks through reel-mounted hoses.

5-2. Air Receiver Removal and Installation

a. Removal.

(1) Remove lines and fitting and air compressor assembly as instructed in TM 5-4930-207-12.

(2) Refer to TM 5-4930-207-12 and remove belt guard, generator assembly, generator mounting bracket, and engine.

(3) Refer to TM 5-4930-207-12 and remove drain cock, hose, valve, gage, and lines and fittings of the air receiver.

(4) Remove air receiver as shown in numerical sequence in figure 5-1.

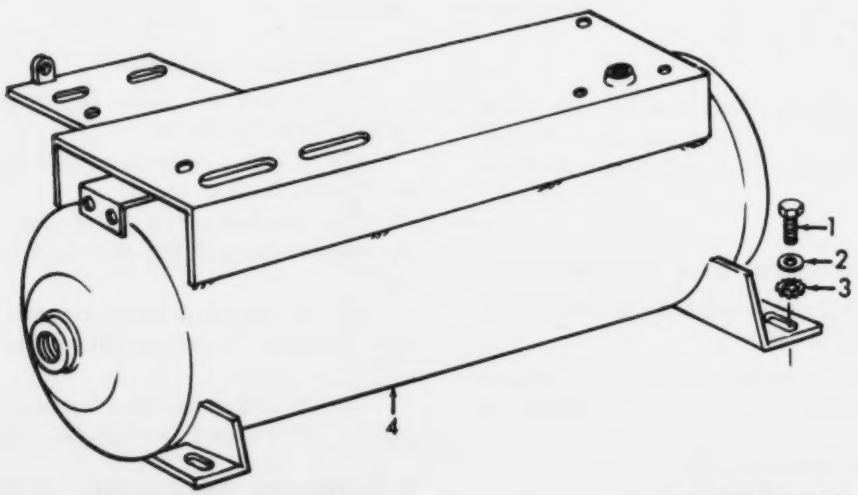
b. Installation.

(1) Install air receiver in reverse order as illustrated in figure 5-1.

(2) Install air receiver drain cock, hose, valve, gage, and lines and fittings as instructed in TM 5-4930-207-12.

(3) Refer to TM 5-4930-207-12 and install engine, generator mounting bracket, generator assembly, and belt guard.

(4) Refer to TM 5-4930-207-12 and install air compressor assembly and lines and fittings.



ME 4930-207-34/5-1

1. Bolt (4)
2. Washer (4)
3. Washer (4)
4. Reservoir

Figure 5-1. Air receiver, removal and installation.

Section II. HOSE REEL

5-3. Hose Reel Removal and Disassembly

a. Removal. Remove the hose reel as instructed in TM 5-4930-207-12.

b. Disassembly. Disassemble the hose reel as illustrated in numerical sequence in figure 5-2.

5-4. Hose Reel Inspection and Repair

a. Inspection.

(1) Inspect pedestals and hose reel for bends, cracks, or other defects.

(2) Inspect union and nipple for stripped threads.

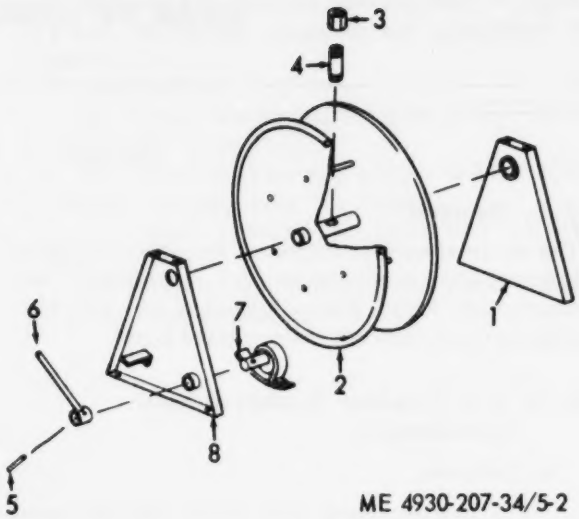
(3) Inspect brake assembly, handle, and pin for excessive wear or other damage.

b. Repair. Repair all parts by replacement.

5-5. Hose Reel Reassembly and Installation

a. Reassembly. Refer to figure 5-2 and reassemble in reverse order.

b. Installation. Install the hose reel as shown in TM 5-4930-207-12.



1. Pedestal
2. Hose reel
3. Union
4. Nipple
5. Pin
6. Handle
7. Brake assembly
8. Pedestal

Figure 5-2. Hose reel, disassembly and reassembly.

Section III. METERS

5-6. General

The meters are designed for dispensing gear and motor oil. The gear hand meter indicates amount dispensed in pints and the motor hand meter in quarts.

5-7. Meters Removal and Disassembly

a. Removal. Remove meters as instructed in TM 5-4930-207-12.

b. Disassembly. A typical disassembly of both meters is illustrated in numerical sequence in figure 5-3.

5-8. Meters Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with P-D- 680 and dry with clean lint-free cloth.

b. Inspection and Repair.

(1) Inspect all parts for wear or leakage. Replace defective parts.

(2) If lubricant leaks around the fitting body (7) replace O-rings (8, 9).

(3) If lubricant leaks around the face dial (2) replace flat packing (15) and leather washer (14).

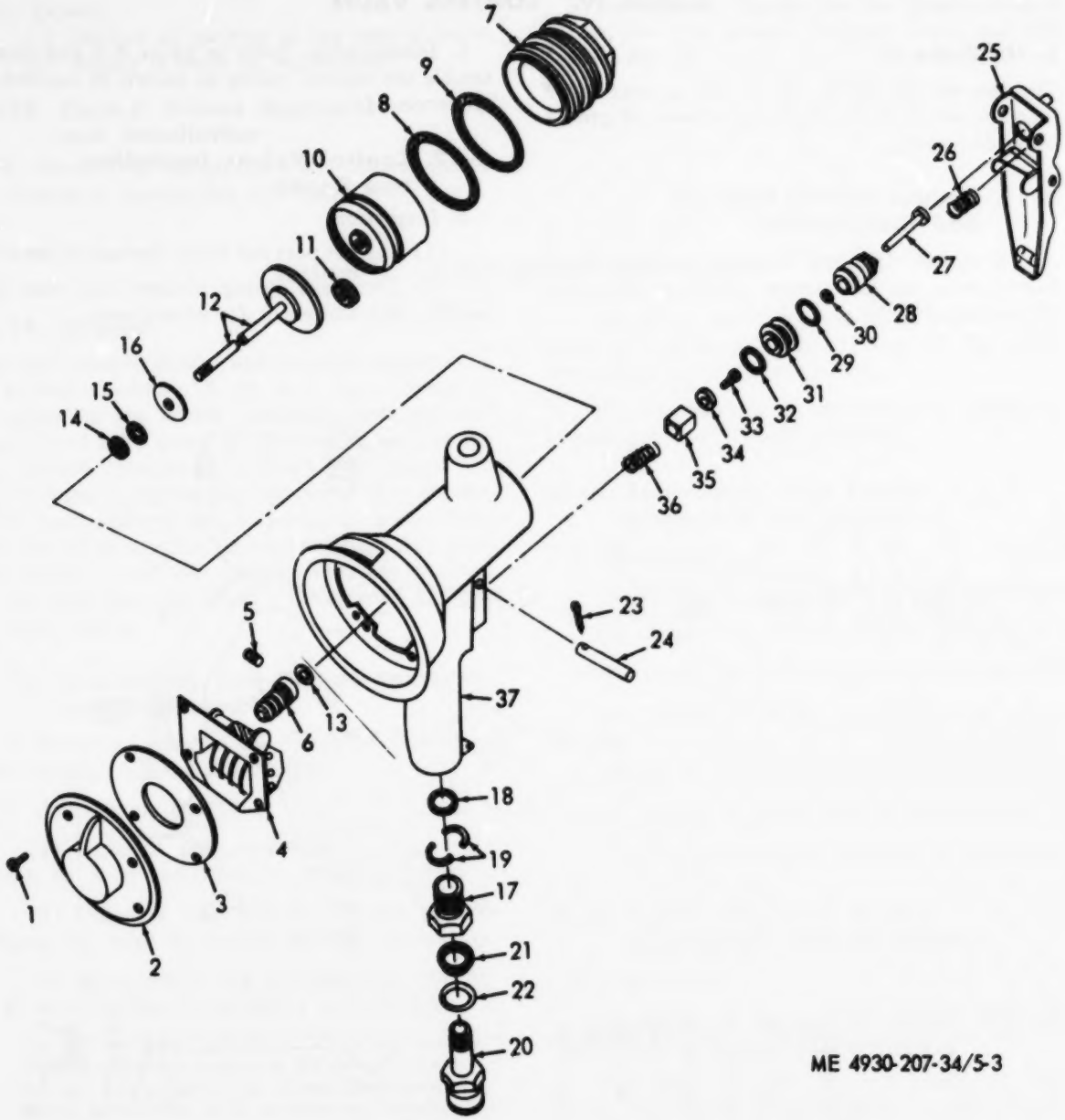
(4) If lubricant leaks around the lubricant inlet replace V-block packing (21) and gasket (18).

(5) If lubricant leaks around the lever assembly (25) replace O-rings (29, 30).

5-9. Meters Reassembly and Installation

a. Reassembly. Reassemble both meters in reverse of removal, see figure 5-3.

b. Installation. Install meters as instructed in TM 5-4930-207-12.



1. Screw (4)
2. Face dial
3. Spacer
4. Totalizer
5. Adjusting screw
6. Worm gear
7. Fitting body
8. O-ring
9. O-ring
10. Metering mechanism assembly
11. Planetary gear
12. Gear and shaft assembly
13. Washer
14. Leather washer
15. Packing
16. Washer
17. Swivel adapter
18. Gasket
19. Split ring (2)
20. Swivel stem
21. Packing
22. Washer
23. Pin
24. Pin
25. Lever assembly
26. Spring
27. Cap and pin assembly
28. Plug
29. O-ring
30. O-ring
31. Valve seat
32. O-ring
33. Screw
34. Seat
35. Plunger
36. Spring
37. Housing

Figure 5-3. Typical hand meter, disassembly and reassembly.

Section IV. CONTROL VALVE

5-10. General

The two control valves are of the squeeze lever type and are used to control the amount of grease being dispensed.

5-11. Control Valves Removal and Disassembly

a. Removal. Unscrew the two grease control valves from the two grease lubricant reels, see TM 5-4930-207-12.

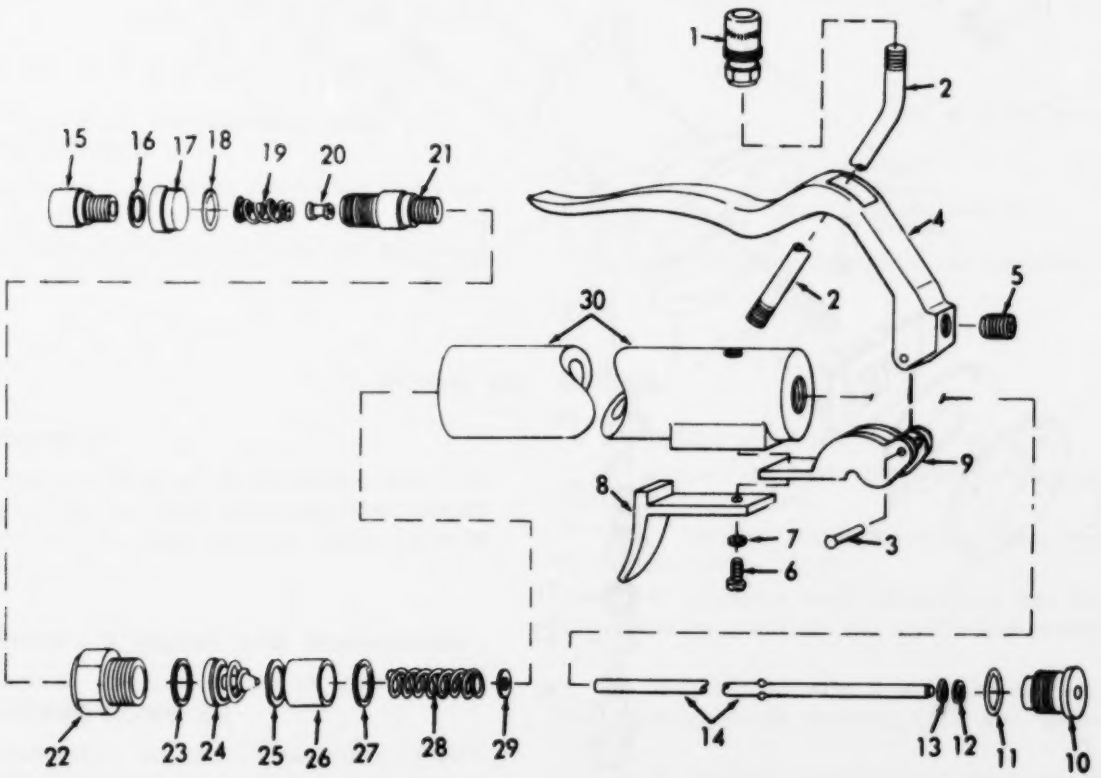
b. Disassembly. Refer to figure 5-4 and disassemble the control valves as shown in numerical sequence.

5-12. Control Valves Inspection and Repair

a. Inspection.

(1) Inspect part for wear, damage or defects.

(2) Compress spring plunger and seat assembly (24) and check for scored seat.



1. Hydraulic coupler
2. Extension
3. Rivet
4. Lever
5. Setscrew
6. Screw
7. Washer
8. Support
9. Bracket
10. Plug, packing
11. Packing
12. Washer
13. Packing
14. Plunger stem
15. Connector
16. Gasket
17. Nut
18. Packing
19. Spring
20. Valve seat
21. Valve bushing
22. Bushing
23. Gasket
24. Spring-plunger-seat assembly
25. Gasket
26. Spacer
27. Gasket
28. Spring
29. Washer
30. Body

Figure 5-4. Control valve, disassembly and reassembly.

b. Repair.

(1) Replace all packing in the control valve.

(2) Repair is made by replacement.

5-13. Control Valves Reassembly and Installation

a. Reassembly. Reassemble the control valves in reverse of disassembly, see figure 5-4,

b. Installation. Screw the two grease control valves into two grease lubricant reels, see TM 5-4930-207-12.

Section V. LUBRICATING UNIT PUMPS

5-14. General

The air powered pumps are mounted opposite the hose reel assembly. A 40 to 1 ratio pump is mounted on the center lubricant container and one 12 to 1 ratio pump is mounted on each of the two outside lubricant containers. The pumps are heavy duty, reciprocating, industrial type pumps. Two hand meters are attached to hoses from the two 12 to 1 ratio pumps for dispensing gear and motor oil and two control valves are attached to the hose from the 40 to 1 ratio pump for dispensing grease.

5-15. Lubricating Unit Pumps Removal and Disassembly

a. Removal. Remove the lubricant pumps as instructed in TM 5-4930-207-12.

b. Disassembly.

(1) Unscrew plug and insert assembly (1 and 2, fig. 5-5) and O-ring(3) from body (32).

(2) Unscrew four screws (4) and remove adapter (5) with the O-ring (6) from valve body.

(3) Move piston trip rod assembly (44, fig. 5-5) to the up position as shown in figure 5-6.

NOTE

A liquid sealant is applied to the threads of rod (44, fig. 5-5) to hold nuts (7 and 39) securely. Special precautions must be observed therefore when disassembling and reassembling these parts.

(4) Place a 3/8 inch open end wrench on the flats of the nut marked A in figure 5-6.

(5) Cover the rod with cloth and insert a slip joint pliers through adapter opening and grasp trip rod assembly above the shoulder at point marked B.

CAUTION

Do not scratch the chrome finish on trip rod assembly.

(6) Turn the 3/8 inch open end wrench counterclockwise and remove nut (7, fig. 5-5) from the trip rod assembly (44).

(7) Disassemble as illustrated in numerical sequence in figure 5-5 through 5-8.

5-16. Lubricating Unit Pumps Inspection and Repair

a. Inspection.

(1) Inspect rods for bends or other damage.

(2) Inspect threads for wear or damage.

(3) Inspect springs for distortion or fatigue.

(4) Inspect housing for cracks and other damage.

b. Repair.

(1) Repair is performed by replacement.

(2) Replace all parts supplied in parts kits.

5-17. Lubricating Unit Pumps Reassembly and Installation

a. Reassembly.

(1) Refer to figures 5-5 through 5-8 and reassemble in reverse of disassembly.

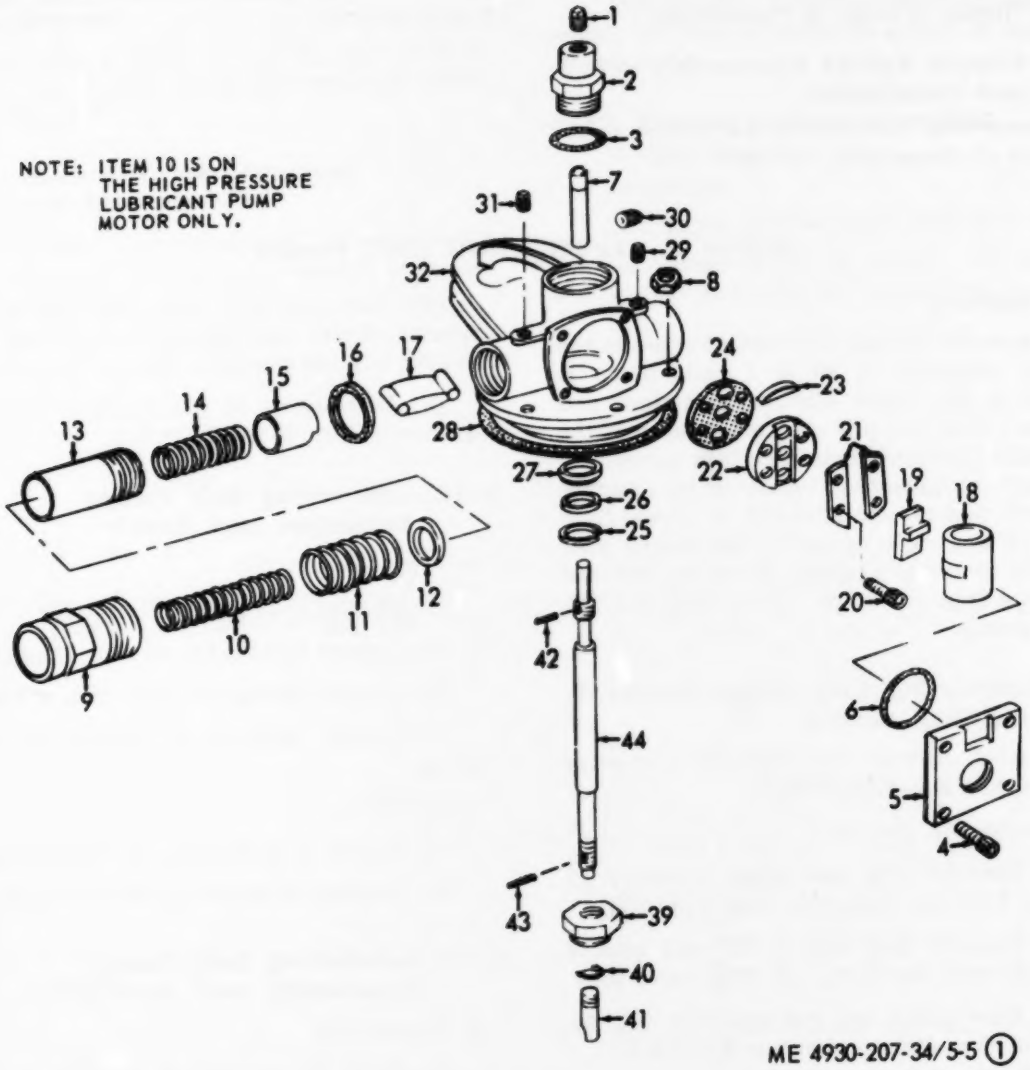
(2) Clean threads of trip rod (44, fig. 5-5①), thoroughly before applying liquid sealant.

(3) Apply liquid sealant to threads of trip rod (44) from which nuts have been removed.

(4) Reassemble trip rod with slip joint pliers and 3/8 inch open end wrench.

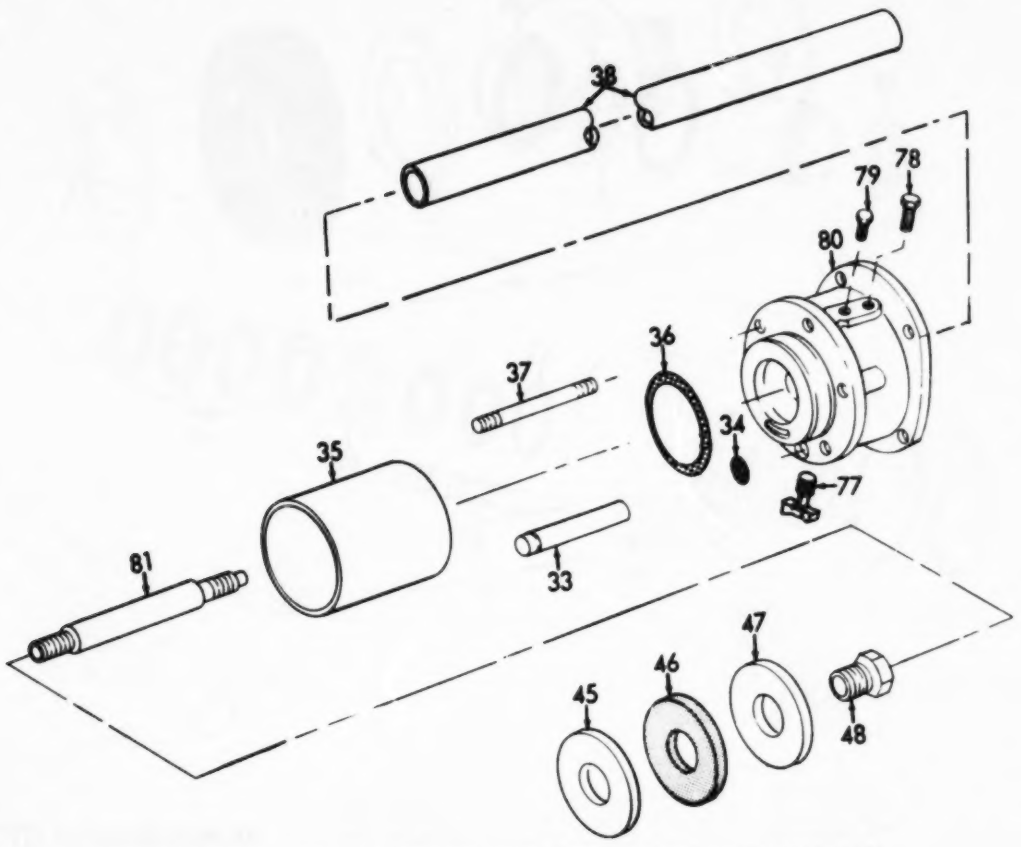
(5) When a new slide (19, 22) is installed in the air motor, the parts should be assembled with the letter "T" in the up position.

b. Installation. Refer to TM 5-4930-207-12 and install as instructed.



1. Plug
2. Plug
3. Packing
4. Screw (4)
5. Adapter
6. Packing
7. Nut
8. Nut (8)
9. Cap
10. Spring
11. Spring
12. Washer
13. Cylinder
14. Spring
15. Plunger
16. Gasket
17. Toggle
18. Shuttle
19. Slide
20. Screw (4)
21. Guide
22. Slide
23. Stop
24. Gasket
25. Ring
26. Washer
27. Block
28. Packing
29. Screw
30. Plug
31. Screw
32. Body
39. Retainer
40. Packing
41. Guide
42. Insert, nylon
43. Insert, nylon
44. Rod

Figure 5-5. High and low pressure lubricant pump motor, disassembly and reassembly (Sheet 1 of 4).



NOTE: TUBE (38) REPRESENTS BOTH THE LOW PRESSURE TUBE ASSEMBLY (FIG. 5-7) AND THE HIGH PRESSURE TUBE ASSEMBLY (FIG. 5-8).

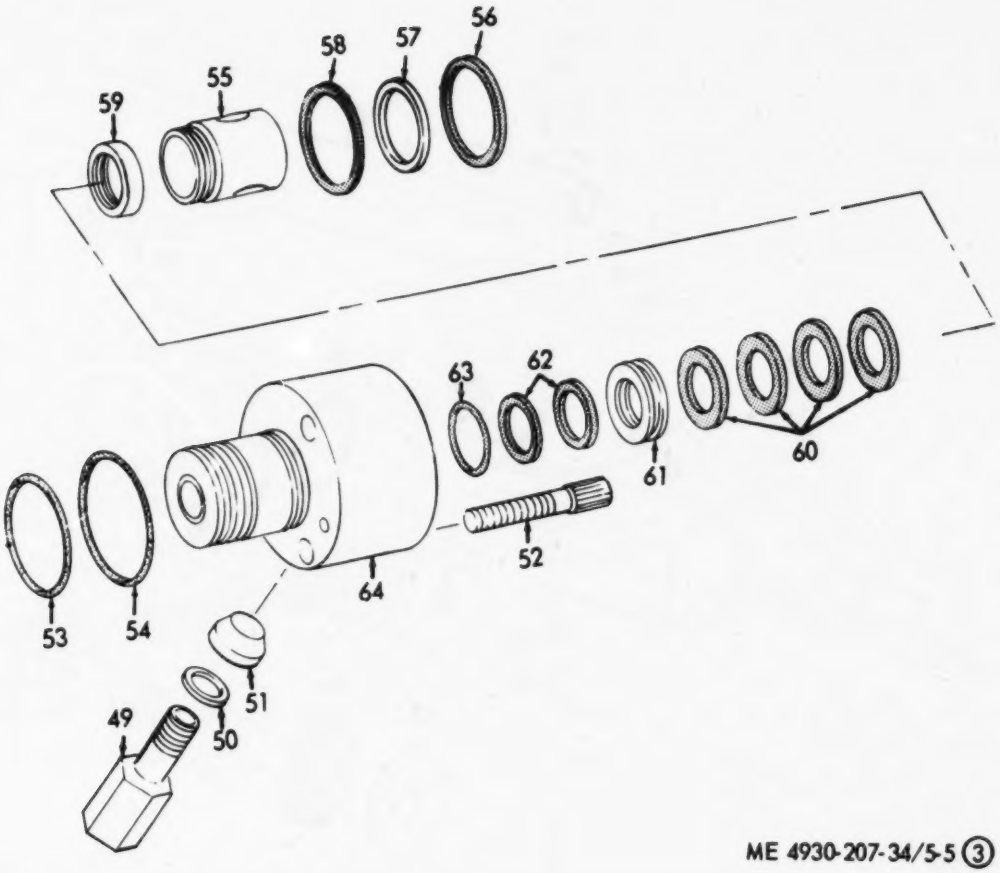
STEP 1. UNSCREW TUBE (38) FROM BOTTOM OF HEAD (80). TUBE (81) IS NOW EXPOSED. APPLY A WRENCH TO THE FLAT SURFACE TO REMOVE NUT (39).

STEP 2. REMOVE NUT (48) FROM TUBE (81) AND SLIDE THE PRESSURE TUBE ASSEMBLY (FIG. 5-7 OR 5-8) FROM BOTTOM OF HEAD (80). THE TUBE (81) WILL COME OUT WITH THE ASSEMBLY.

ME 4930-207-34/5-5 (2)

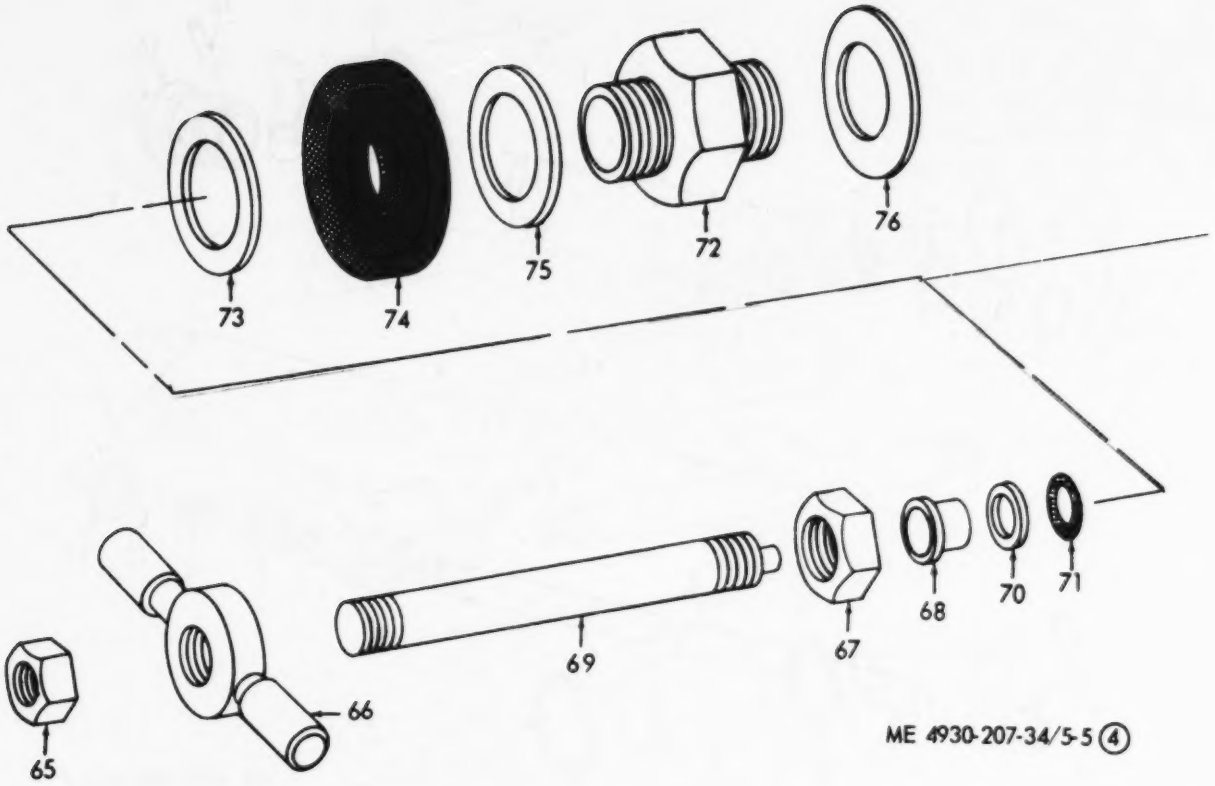
33. Tube
34. Packing (2)
35. Cylinder
36. Packing
37. Rod (6)
38. Tube
45. Washer
46. Packing
47. Washer
48. Nut
77. Petcock
78. Screw
79. Screw
80. Head
81. Tube

Figure 5-5. High and low pressure lubricant pump motor, disassembly and reassembly (Sheet 2 of 4).



49. Adapter
50. Washer
51. Bushing
52. Screw (3)
53. Packing
54. Packing
55. Spacer
56. Gasket
57. Washer
58. Gasket
59. Bearing
60. Packing
61. Ring
62. Packing
63. Packing
64. Body

Figure 5–5. High and low pressure lubricant pump motor, disassembly and reassembly (Sheet 3 of 4).



65. Nut
66. Handle
67. Nut
68. Bushing
69. Stem
70. Washer
71. Packing
72. Cap
73. Washer
74. Packing
75. Washer
76. Washer

Figure 5-5. High and low pressure lubricant pump motor, disassembly and reassembly (Sheet 4 of 4).

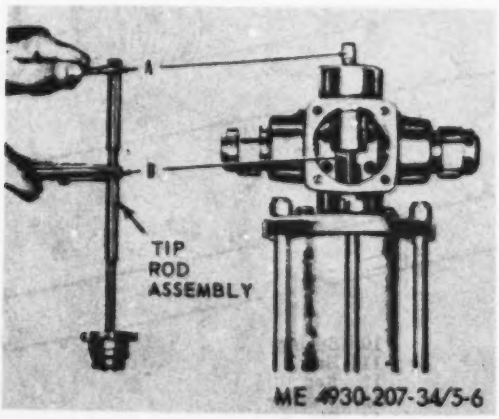
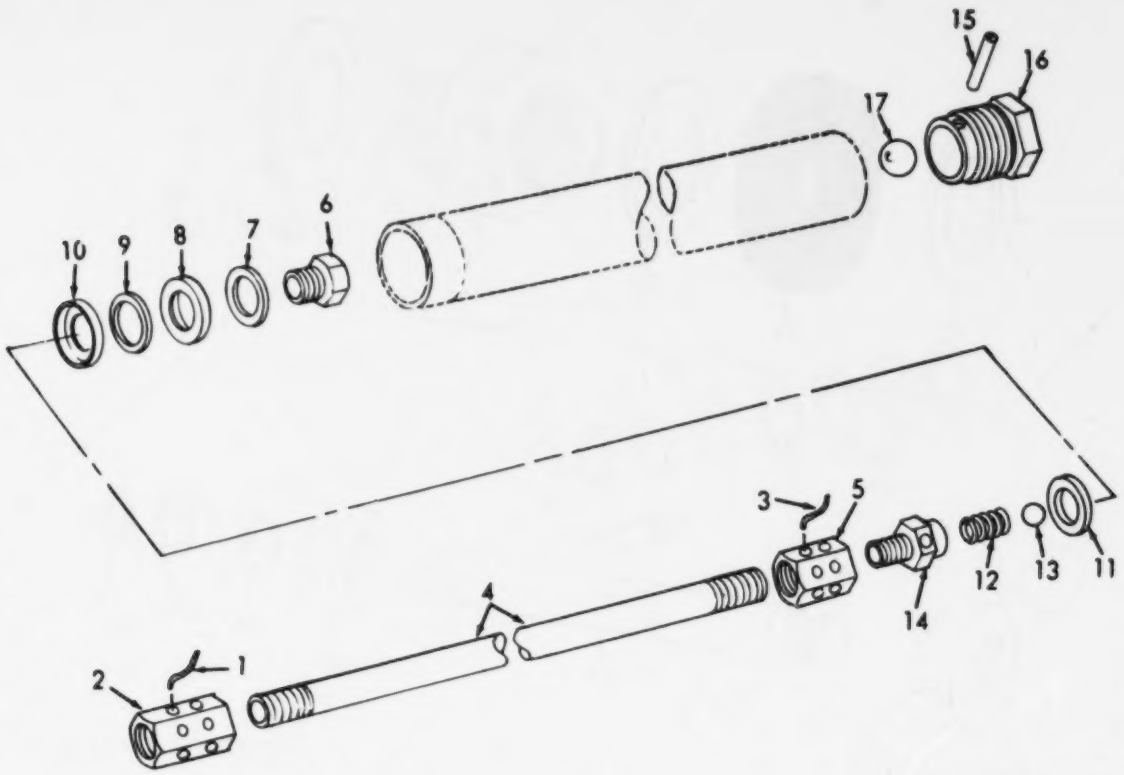


Figure 5-6. Removing nut from piston rod of lubricant pump.



1. Clip
2. Coupling
3. Clip
4. Rod
5. Coupling
6. Seat
7. Washer
8. Cup
9. Plate
10. Cup
11. Washer
12. Spring
13. Ball bearing
14. Adapter
15. Pin
16. Body
17. Ball

Figure 5-7. Low pressure tube, disassembly and reassembly.

1. Clip
2. Coupling
3. Clip
4. Rod
5. Coupling
6. Piston
7. Spacer
8. Spacer
9. Retainer
10. Spring
11. Ball
12. Rod
13. Washer
14. Pin
15. Adapter
16. Washer
17. Screw
18. Packing
19. Body
20. Seat
21. Spacer
22. Plate
23. Nut
24. Rod
25. Body
26. Adapter

Key to—*Figure 5-8. High pressure tube, disassembly and reassembly.*

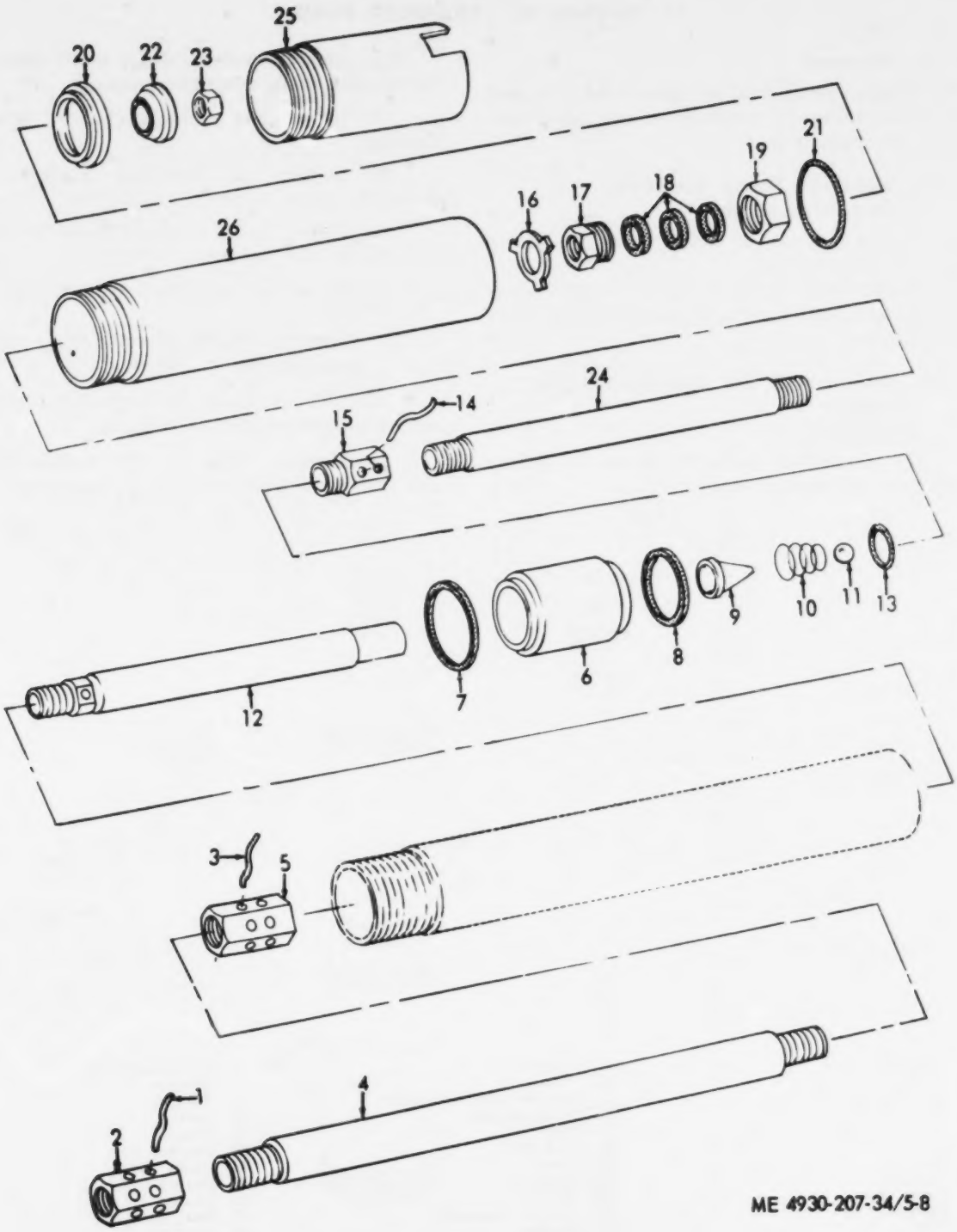


Figure 5-8. High pressure tube, disassembly and reassembly.

Section VI. TRANSFER PUMP

5–18. General

The transfer pump is an air operated device used for transferring lubricants from original drums to the lubricant tanks.

5–19. Transfer Pump Removal and Disassembly

a. Removal. Refer to TM 5–4930–207–12 for removal instructions.

b. Disassembly. Refer to figure 5–9 and disassemble the transfer pump in numerical sequence as illustrated.

5–20. Transfer Pump Inspection and Repair

a. Inspection.

(1) Inspect base valve (9) to see if it is free from dirt and foreign matter.

(2) Inspect washer (18) to see if clean and it fluctuates easily when reassembled.

(3) Inspect two packings (10) for wear or damage.

(4) Inspect all threaded surfaces for scratches, burrs, or wear.

(5) Inspect pump rods and tubes for bends, breaks, or other damage.

b. Repair. Repair is made by replacement.

5–21. Transfer Pump Reassembly and Installation

a. Reassembly. Refer to figure 5–9 and reassemble in reverse order of removal.

b. Installation. Refer to TM 5–4930–207–12 and install the transfer pump as instructed.

1. Adapter
2. Valve
3. Adapter
4. Thumbscrew
5. Bung adapter
6. Hose and cap
7. Bushing
8. Cylinder
9. Valve base
10. Packing (2)
11. Nut
12. Washer
13. Stud
14. Washer
15. Pin
16. Stopnut
17. Plunger
18. Washer
19. Rod and stop assembly
20. Pump casting
21. Ring
22. Packing
23. Ring
24. Bushing
25. Packing
26. Adapter assembly
27. Washer
28. Packing
29. Cylinder assembly cap
30. Spring
31. Cylinder assembly
32. Adapter assembly
33. Piston assembly
34. Washer
35. Washer
36. Spring
37. Spacer
38. Stopnut (3)
39. Screw (3)
40. Gasket (3)
41. Spacer (3)
42. Seal plate
43. Adapter
44. Washer
45. Packing
46. Washer
47. Washer

Key to—Figure 5–9. Transfer pump, disassembly and reassembly.

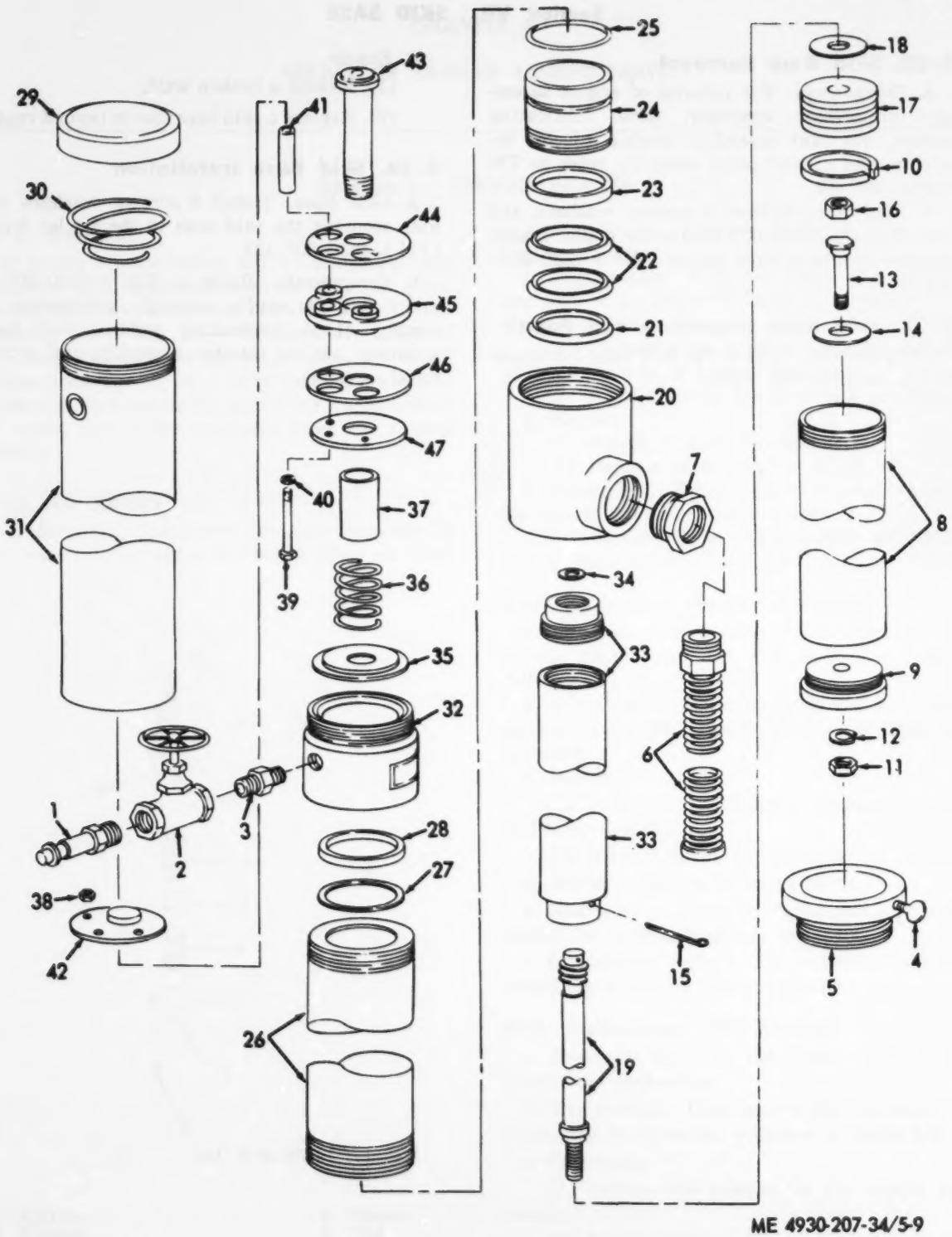


Figure 5-9. Transfer pump, disassembly and reassembly.

Section VII. SKID BASE

5-22. Skid Base Removal

a. Components. For removal of engine assembly, compressor assembly, three lubricating pumps, reel bank assembly, alcohol injector assembly, and control panel assembly refer to TM 5-4930-207-12.

b. Skid base. Remove 6 screws, washers, and nuts that attach the skid base to the trailer frame. Remove skid base from trailer (TM 5-4930-207-12).

5-23. Skid Base Inspection and Repair

a. Inspection. Inspect the skid base for excessive dents or broken welds.

b. Repair.

(1) Reweld a broken weld.

(2) Replace a skid base that is beyond repair.

5-24. Skid Base Installation

a. Skid Base. Install 6 screws, washers, and nuts securing the skid base to the trailer frame (TM 5-4930-207-12).

b. Components. Refer to TM 5-4930-207-12 and install the engine assembly, compressor assembly, three lubricating pumps, reel bank assembly, alcohol injector assembly, and control panel assembly.

CHAPTER 6

REPAIR OF TRAILER COMPONENTS

Section I. SERVICE BRAKES

6-1. General

The trailer service brakes are the scavenger type actuated by a diaphragm-type air chamber. Each brake has two wheel cylinders secured to the backing plate. The wheel cylinders are actuated hydraulically to give an equal pressure to all brakeshoes. The air relay valve controls the trailer brakes and automatically applies the trailer brakes in event the trailer separates from the towing vehicle.

6-2. Air Filters

a. Removal. Disconnect two lines from air filter, remove two nuts and U-bolt holding air filter to trailer frame. Remove other air filter in a similar manner.

b. Disassembly. Refer to figure 6-1 for disassembly of air filter in numerical sequence.

c. Inspection.

(1) Inspect filter body for cracks, breaks, stripped threads, and other damage.

(2) Inspect spring for distortion or fatigue.

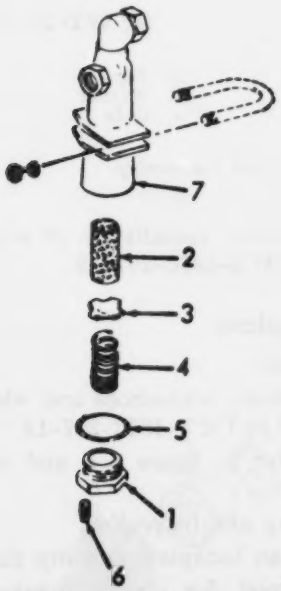
d. Repair.

(1) Repair is made by replacement.

(2) Replace parts supplied in kit.

e. Reassembly. Refer to figure 6-1 and reassemble the air filter in reverse of removal.

f. Installation. Refer to TM 5-4930-207-12 for correct installation of air filter.



ME 4930-207-34/6-1

1. Adapter
2. Element
3. Washer
4. Spring
5. Washer
6. Plug
7. Body

Figure 6-1. Air filter, disassembly and reassembly.

6-3. Hydraulic Master Cylinder

a. Removal. TM 5-4930-207-12 provides removal instructions for the hydraulic master cylinder.

b. Disassembly. Refer to figure 6-2 and disassemble the hydraulic master cylinder in numerical sequence.

c. Inspection.

(1) Inspect body for dents, stripped threads, and other damage.

(2) Inspect spring for distortion or fatigue.

d. Repair. Replace defective parts.

e. Reassembly. Refer to figure 6-2 and reassemble the hydraulic master cylinder.

f. Installation. Refer to TM 5-4930-207-12 and install the hydraulic master cylinder.

6-4. Brakeshoes and Linings

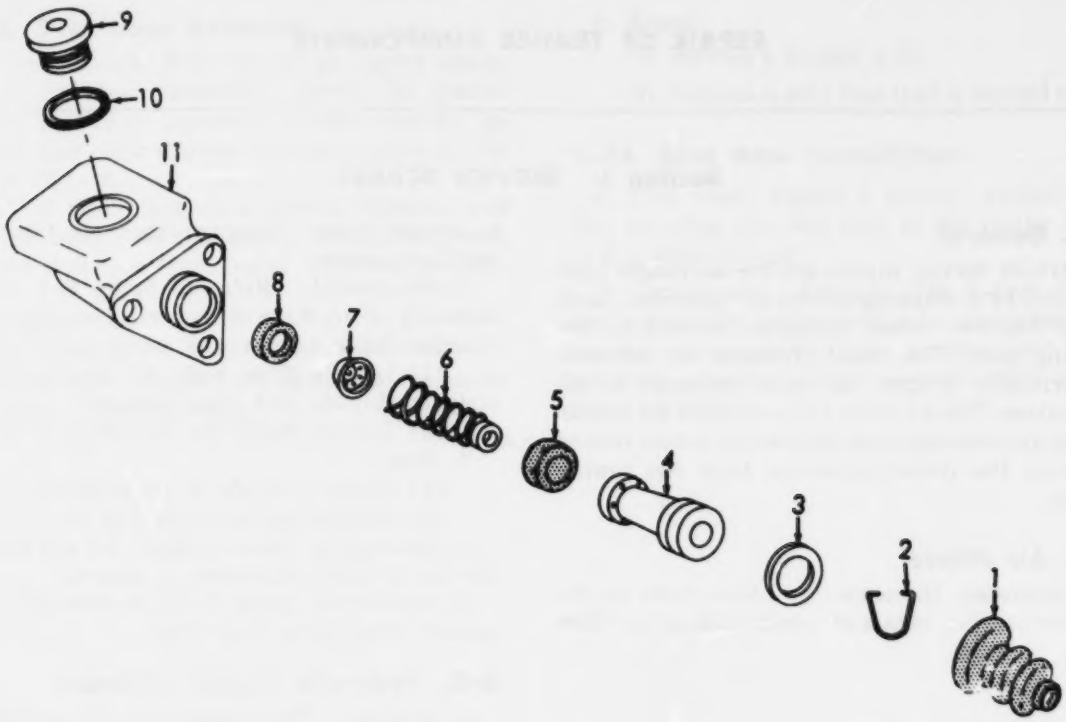
a. Removal. Refer to TM 5-4930-207-12 and remove the brakeshoes.

b. Disassembly. Disassemble the brakeshoe as illustrated in numerical sequence in figure 6-3.

c. Inspection.

(1) Inspect the brakeshoes for cracks and breaks.

(2) Inspect linings for wear and evidence of grease or hydraulic fluid having penetrated the linings.



1. Boot
2. Ring
3. Washer
4. Piston
5. Cup
6. Spring
7. Valve
8. Seat
9. Cap
10. Washer
11. Body

Figure 6-2. Hydraulic master cylinder, disassembly and reassembly.

d. Repair. Replace all defective parts.

e. Reassembly. Refer to figure 6-3 and reassemble the brakeshoe.

f. Installation. Install the brakeshoes as instructed in TM 5-4930-207-12.

6-5 Wheel Cylinders

a. Removal. Remove the wheel cylinders as instructed in TM 5-4 207

b. Disassembly ure 6-4 and disassemble the wheel cylinde in numerical sequence.

c. Inspection.

(1) Inspect the inside of cylinder for pits, scratches, and rust.

(2) Inspect spring for distortion or fatigue.

d. Repair. Replace damaged or defective parts.

e. Reassembly. Refer to figure 6-4 and reassemble the wheel cylinders.

f. Installation. Installation of wheel cylinders is given in TM 5-4930-207-12.

6-6. Backplate

a. Removal.

(1) Remove brakeshoes and wheel cylinders as instructed in TM 5-4930-207-12.

(2) Refer to figure 6-5 and remove backplate.

b. Cleaning and Inspection.

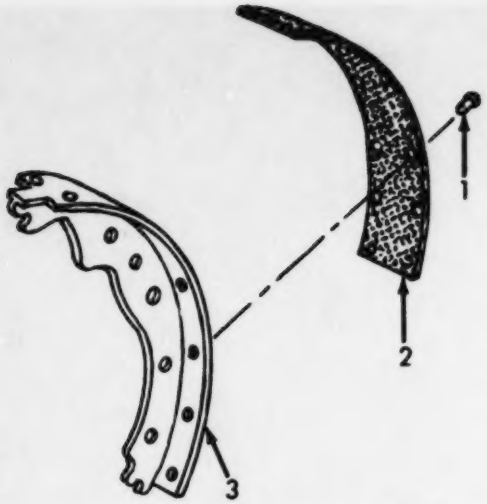
(1) Clean backplate and dry thoroughly.

(2) Inspect for cracks, breaks, and other damage, replace a defective backplate.

c. Installation.

(1) Refer to figure 6-5 and install the backplate.

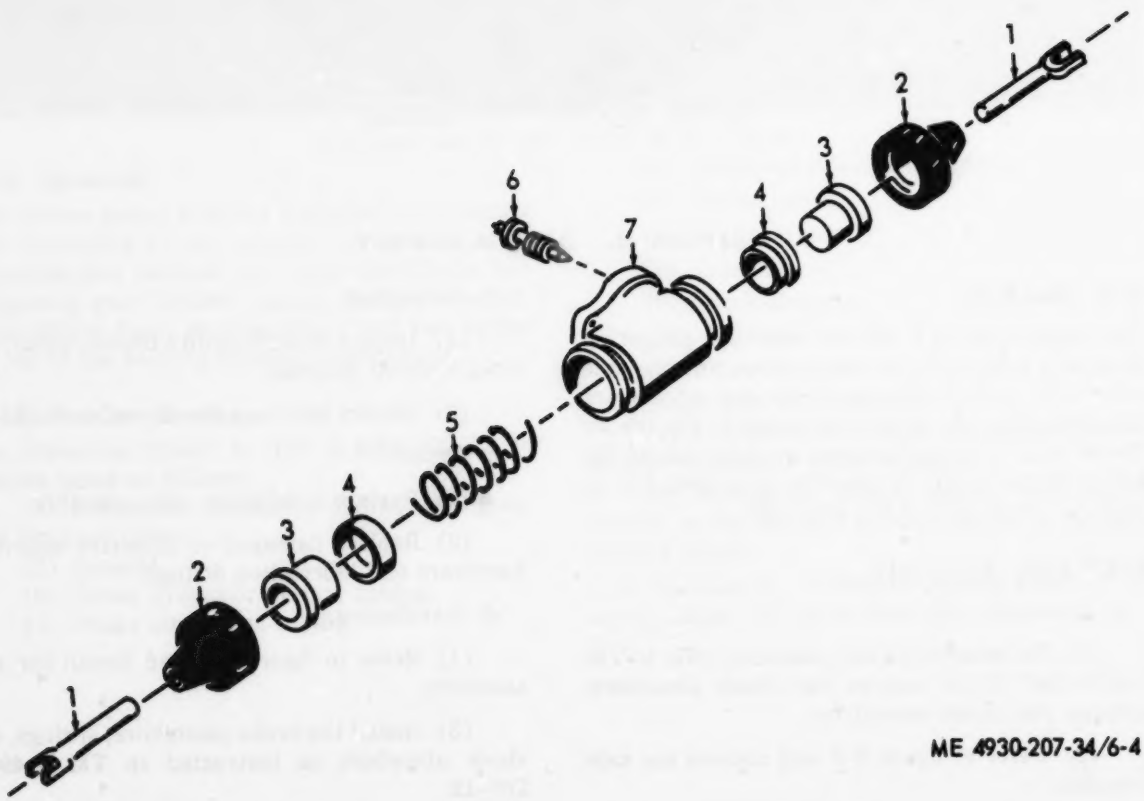
(2) Install brakeshoes and wheel cylinders as instructed in TM 5-4930-207-12.



ME 4930-207-34/6-3

1. Rivet (56)
2. Lining (4)
3. Brakeshoe (4)

Figure 6-3. Brakeshoe, disassembly and reassembly.



ME 4930-207-34/6-4

1. Link
2. Boot
3. Piston
4. Ring
5. Spring
6. Bleeder valve
7. Cylinder body

Figure 6-4. Wheel cylinder, disassembly and reassembly.

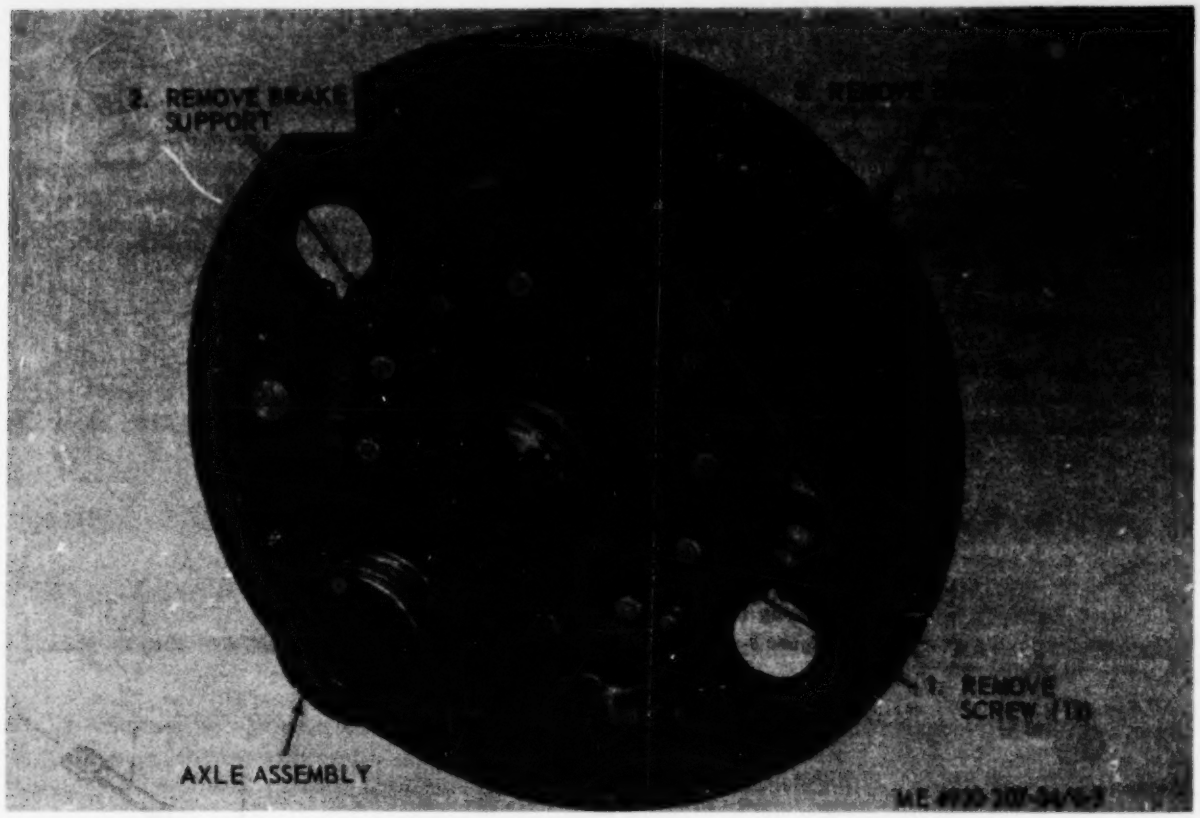


Figure 6-5. Backplate, removal and installation.

Section II. AXLE ASSEMBLY

6-7. General

The trailer axle is a welded assembly consisting of an axle tube and a tie beam connecting the axle tube with a stub axle on which the wheels are mounted. The axle tube is mounted to the trailer frame with two bearings, one on each side of the trailer frame. A shock absorber mounting link is welded to each end of the axle tube.

6-8. Axle Assembly

a. Removal.

(1) To remove the axle assembly refer to TM 5-4930-207-12 to remove the shock absorbers, springs, and brake assemblies.

(2) Refer to figure 6-6 and remove the axle assembly.

b. Inspection.

(1) Inspect axle for bends, broken welds, and worn bearing journals.

(2) Inspect bearings for excessive wear.

c. Repair.

(1) Replace a defective axle assembly.

(2) Replace damaged or defective mounting hardware and lubrication fittings.

d. Installation.

(1) Refer to figure 6-6 and install the axle assembly.

(2) Install the brake assemblies, springs, and shock absorbers as instructed in TM 5-4930-207-12.

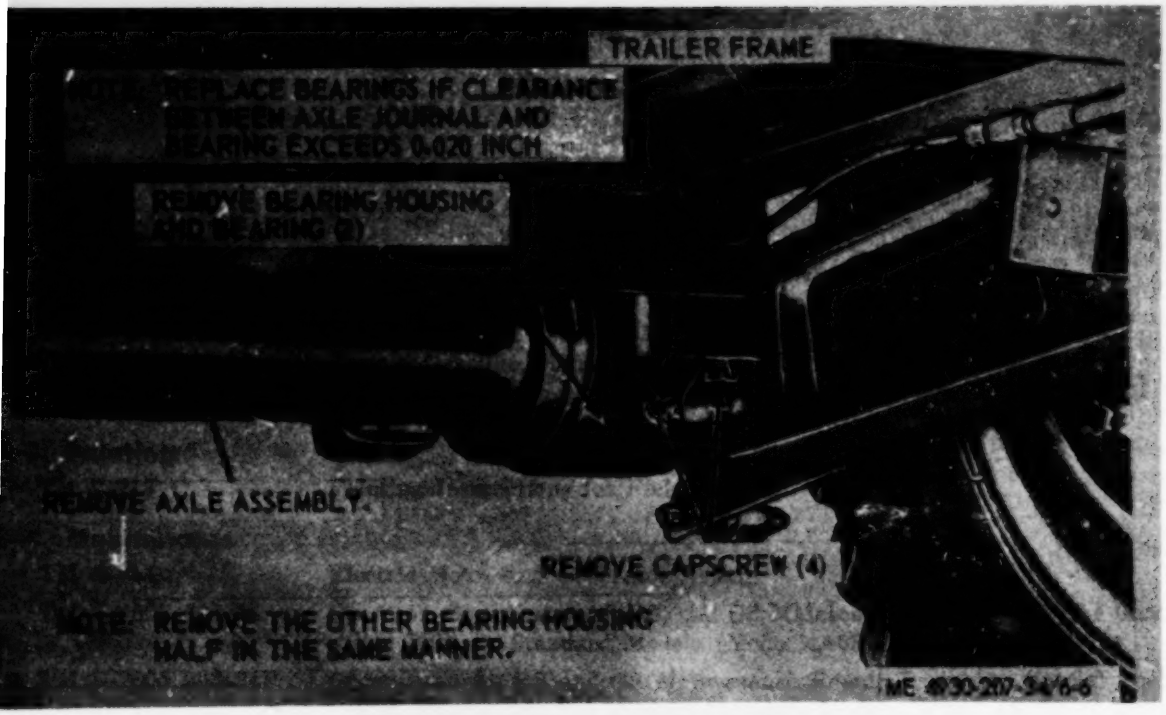

TRAILER FRAME
REMOVE AXLE ASSEMBLY.
REMOVE CAPSCREW (4)
NOTE: REMOVE THE OTHER BEARING HOUSING HALF IN THE SAME MANNER.
ME 4930-207-34/6-6

Figure 6-6. Axle assembly, removal and installation.

Section III. TRAILER FRAME

-9. General

he trailer frame is an all steel-welded construc-on consisting of two parallel frame rails with ossmembers between the rails. The frame has landing gear bracket, spring hanger bracket, nd lifting bars, lashing rings, and two upper lves of the bearing housing welded to it.

-10. Trailer Frame

a. Removal. Refer to TM 5-4930-207-12 to move items as follows:

(1) Reflectors, clearance lights, taillights, d blackout lights.

(2) Lunette

(3) Brake hydraulic system tubing.

(4) Brake air system tubing.

(5) Brakes and wheel cylinders.

(6) Brake valve.

(7) Air reservoir.

(8) Landing gear.

(9) Shock absorber.

(10) Springs

(11) Axle assembly

b. Inspection and Repair.

(1) Inspect trailer frame for cracks, breaks, broken welds, and other damage.

(2) Straighten minor bends and reweld broken welds. Replace a frame which is damaged beyond repair.

c. Installation. Install in reverse order of removal. Refer to TM 5-4930-207-12.

APPENDIX A

REFERENCES

A-1. Fire Protection

TB 5-4200-200-10	Hand Portable Fire Extinguishers Approved for Army Users

A-2. Lubrication

LO 5-2805-203-12	Engine, Gasoline, Model 4A032-11
LO 5-4930-207-12	Lubricating and Servicing Unit

A-3. Painting

TM 9-213	Painting Instructions for Field Use

A-4. Maintenance

TM 5-764	Electric Motor and Generator Repair
TM 5-2805-203-14	Operator, Organizational, DS, and GS Maintenance Manual, Engine Gasoline Military Standard Models (Model 4A032-1; Model 4A032-11)
TM 5-2805 203-24P	Organizational, DS and GS Maintenance Repair Parts and Special Tools List, Engine Gasoline Military Standard Models (Model 4A032-1; Model 4A032-11)
TM 5-4930-207-12	Operator and Organizational Maintenance Manual
TM 5-4930-207-20P	Organizational Maintenance Repair Parts and Special Tools List
TM 5-4930-207-35P	Direct Support, General Support and Depot Maintenance Repair Parts and Special Tools List
TM 9-1870-1	Care and Maintenance of Pneumatic Tires
TM 9-6140-200-15	Operation and Organizational Field and Depot Maintenance Storage Batteries, Lead-Acid Type
TM 38-750	Army Equipment Record Procedures

A-5. Shipment and Storage

TB 740-90-1	Administrative Storage of Equipment
TB 740-93-2	Preservation of USAMEC Mechanical Equipment for Shipment and Storage.

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By Order of the Secretary of the Army:

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General, United States Army,
Chief of Staff.

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